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ILLUSTRATIONS.

Church of St. Bartholomew the Great, West Smithfield.—View showing proposed Completion of the East End.—Mr. Aston Webb, Architect... 674-675
Monuments lately discovered in the Crypt of the old Parish Church, Clapham 678
Sections of the Church of St. Bartholomew the Great, West Smithfield 679
Accepted Design for the Cheltenham Grammar School.—Mr. Henry Hall, Architect 682
A Porch in Terra-Cotta, East Sheen.—Mr. T. E. Collcutt, Architect 683
West Window, Tickhill Church, Yorks.—Executed in Stained Glass by Messrs. Powell Bros., Leeds..... 686-687

CONTENTS.

St. Bartholomew the Great, West Smithfield 663
The Indian and Colonial Exhibition..... 665
Notes..... 666
Architecture at the Royal Academy.—II. 668
The Royal Academy Exhibition..... 668
The Grosvenor Gallery 670
A Social Reform Conference 670
The Edinburgh Exhibition 671
The St. Paul's Railway Station: London, Chatham, and Dover Railway 671
Royal Institute of British Architects: Election of President and Council..... 671
The Church of St. Bartholomew-the-Great..... 672
The Atkins Monuments, Clapham..... 672
Porch at East Sheen, Surrey 672
Cheltenham Grammar School 672
West Window, Tickhill Church, Yorkshire 672
Architectural Societies 672
Chair, St. Nicholas Church, Rye (Illustrated) 689
Competitions 689
Exhibition of Japanese Art-Work 689
Architectural Association: Italian Excursion 689
The Fireman's Exhibition..... 690
Examinations for Municipal and Sanitary Engineers and Surveyors 690
Loan Exhibition of Pictures at the Walker Art Gallery, Liverpool 690
Delays in Sanitary Legislation 690
The Geology of the Earth's Surface in its Sanitary Aspect..... 691
The Proposed Mutilation of the Charterhouse Buildings..... 691
The Art-Union of London: Annual Meeting and Prize Distribution 692
An Improved Bath 692
A New Disconnector (Illustrated) 693
New Buildings for Poor Law Administration 693
"Robinson's Cement" 693
Newcastle-under-Lyme Public Buildings 693
Truro Cathedral Central Tower Fund 693
Brewery Chimney-Shaft 694
The Student's Column: Our Building Stones.—IX. 694
Recent Patents 695
Recent Sales of Property 695
Meetings 695
Miscellanea 696
Prices Current of Building Materials 697

St. Bartholomew the Great, West Smithfield.

THE works designed for the preservation of this noble church form an important incident in current architectural history, partly on account of the intrinsic beauty and high antiquity of the fabric, and partly because they bring to a head many of the vexed questions which perplex those who are engaged in rescuing the works of our forefathers from desecration and decay, while respecting their present and future usefulness.

To begin at the beginning,—the history of the foundation of the church is unusually clear and singularly interesting. By a most fortunate chance, a Latin MS. entitled, "Liber fundacionis Ecclesie Sancti Bartholomei, Londoniarum," written between the years 1174 and 1189,—and probably more exactly about the year 1180,—by a monk of the priory, who had himself talked with those who remembered the founder, is still extant. It covers eighty-six leaves of vellum, measuring 10½ in. by 7⅞ in., and is preserved in the British Museum, and numbered "Vespasian B IX." An English translation was made about the year 1400,—the date, it will be noted, of Chaucer's death,—and this is almost more interesting than the original, as being an example of English prose at a time when it was first assuming a settled form. The translation is much contracted, and has recently been most carefully and learnedly edited by Dr. Norman Moore, Warden of the College of St. Bartholomew's Hospital.

To recite shortly the material part of the record it is only necessary to say that the founder of the church and hospital was one Rahere, or Rayer, who, born of humble parents, possessed a pleasant wit, by the exercise of which he gained admittance to the households of princes and nobles, diverting their leisure by his antics and buffoonery, and "annoynting thir eerys with japys and flatterynges," pandering in fact to all their follies. From this useless,—perhaps sinful,—life he was miraculously called, and like so many others in those strange times when vice and virtue, like sun and shadow, stood out in bold contrast, he became first an exemplary penitent, and afterwards almost a saint, pious, contemplative, and devoted body and soul to works of practical charity. During a visit to Rome "wepynge hys dedis, and reducyng to mynde the scapis of hys yougth," he fell into a serious illness and vowed to the service of God whatever might remain to him of life. He recovered, and most religiously kept his vow. Of course he had a vision, which is set out by his admiring biographer with elaborate detail and devout unction. The blessed Apostle appeared to Rahere, and counselled him to build a church in a certain spot "yn the subbarbis," which should be more particularly indicated; while for the due performance of the holy work the needful help, he was assured, should not be wanting. A whole chapter is given to the "exposicion" of this vision, over which we must not linger.

Rahere prudently disclosed his purpose to his bishop, and secured that prelate's good offices with the king. The chosen site was in Smithfield, which was then so very much "yn the subbarbis" that it was a waste marsh,—a sort of no man's land,—"dunge and fenny," defiled with all manner of ordure, and bearing aloft the common gallows whereon were hanged "thevys and those dampned by judicialle auctoryte." He called to his aid a certain old man named Alfune, who had in his youth been employed in the building of St. Giles's Church in Cripplegate, and set valiantly to work. Church builders appear from the first to have met with their share of discouragement and opposition. Envious men conspired to thwart and annoy him, destroying nightly his daily work. The critic of the period was down upon him heavily, some "begiled hym with symulate frendschippes," and others "provoked hym with despitis," while from others again he went in fear of his life. Nevertheless, he struggled manfully against all difficulties, and gradually attracting to his side many faithful souls, he at last successfully accomplished his self-imposed task. The foundation-stone was laid in the month of March, 1123. The first portion of the work was consecrated in 1133 by Richard of Beauvais, and Rahere was elected the first Prior of the Community of Augustinian Canons, who were then and there established. On the 20th of September, 1144, their founder passed peacefully away, "forsaking the cley house of thys worlde that in the house of his fadir he myghte be crownyd." He ruled his convent with firmness and discretion, and it grew and prospered under his wise guidance: some at least of his solid, sturdy work may still be seen pretty much as it left his hands: it has survived most of the additions of his successors, and will, with reasonable care, endure for centuries, a witness at once to the good prior's simple faith and ardent charity.

The full extent which the ecclesiastical and monastic buildings eventually assumed may be seen in the plan on the following page. The order of their edification appears to have been somewhat as follows:—

First the choir and choir aisle, the north and south transepts, and the tower at their intersection, and an eastern Lady-chapel. As this is referred to in the MS. as an "oratory," it was probably of much less extent than the handsome Lady-chapel afterwards built, the enclosing walls of which remain. Even the original Lady-chapel would appear to have been somewhat of an after-thought, for its junction with the choir aisle is marked by a certain awkwardness in the apsidal groining, which was evidently no part of the original scheme. A point of some interest is connected with the central tower, which was not a perfect square, owing to a variation in the widths of the nave and transepts respectively. The arches carrying the tower have, however, their springings and crowns level, and as the wider arches are semicircular it follows that the narrower ones are pointed,—and thus we see the pointed arch adopted *ex necessitate* by Norman builders. It is perhaps doubtful whether a Norman nave was ever built, the one Norman eastern bay having probably been erected as a counterfort to the thrust of the tower arches. The excavations now in progress or contemplated, will no doubt throw some light on this question. In any case an Early English nave was built in the succeeding century, and the earlier choir clear-story was replaced by one of later date. A fine Early English doorway still stands exactly in the prolongation of the south aisle; but whether this formed an entrance to the church or to the precincts it is not easy to determine at present. The fourteenth century was one of great building activity at St. Bartholomew's. A new Lady-chapel of splendid proportions was erected. The apsidal east end of the choir was converted into the square east end, which was always the favourite with English architects, a wall being built from the foundations upwards at the points in the side slightly east of the full diameter of the apse. This of course hid the Norman piers, and the space between them and the new east walls was used as a receptacle for human remains, and long known as "Purgatory." Early in the fifteenth century further extensions of the priory were in progress, — the cloisters, chapter-house, refectory, dormitory, and accessory buildings were erected, and the fortunes of the convent appear to have reached their zenith. Prior Bolton, 1506-32, effected some further alterations and embellishments which cannot all be with certainty traced. He raised the whole floor of the church some 2 ft. 6 in., altered in some way the central tower, and added the watching chamber on the south side of the

choir, which has ever since formed one of the peculiar features in the church. With the close of his rule the clouds began to gather about the priory, and its dis-edification but too quickly followed. Robert Fuller, the last prior, surrendered his charge into the hands of the king on the 15th October, 1540, who thereupon devised the prior's house, infirmary, dormitory, chapter-house, hall, kitchen, stables, &c., to Sir Richard Rich, the Lord Chancellor, for the sum of 1,064*l.* 11s. 3d. The nave of the church was destroyed, and the choir was decreed to be used thereafter as a parish church "for ever."

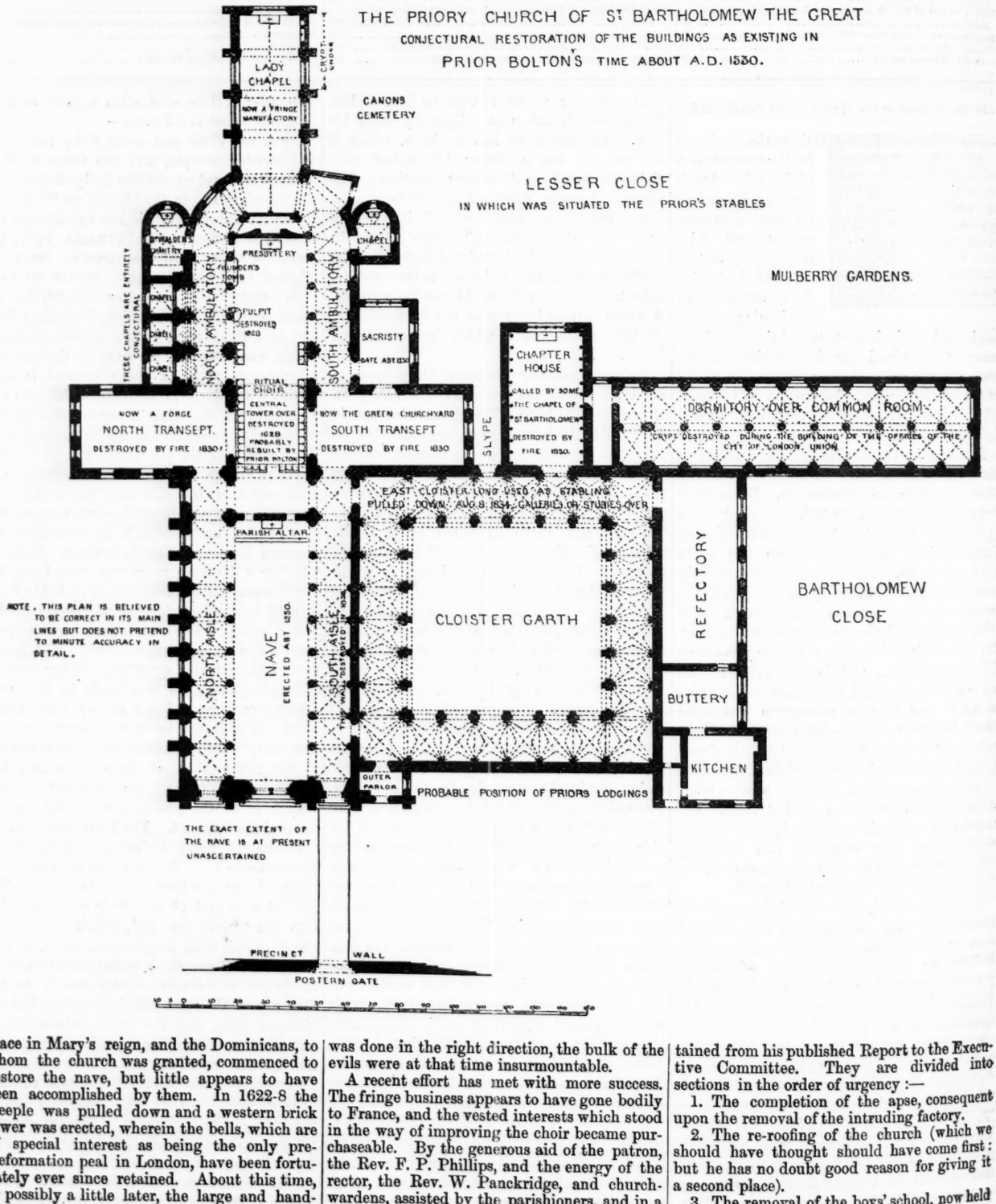
A change in the fortunes of the Priory took place in Mary's reign, and the Dominicans, to whom the church was granted, commenced to restore the nave, but little appears to have been accomplished by them. In 1622-8 the steeple was pulled down and a western brick tower was erected, wherein the bells, which are of special interest as being the only pre-Reformation peal in London, have been fortunately ever since retained. About this time, or possibly a little later, the large and handsome eastern windows were, for some inscrutable reason, destroyed, and the present characterless semicircular headed openings substituted. Since then the course of degradation and spoliation has been continuous and rapid, and the greed or supineness of the custodians of the church have reduced it to a sorry plight indeed. Secular buildings of all sorts have clustered round the exterior walls so thickly that the casual visitor might pass within a few feet of this fragment of this noble but desecrated church without suspecting its existence. A blacksmith's forge occupies the site of the north transept, and, as a crowning calamity, a fringe factory, which has usurped the site of the Lady-chapel, has been allowed to protrude westward into the sanctuary itself and overhang the very altar. The force of indignity cannot further go!

Strenuous efforts were made about a quarter of a century ago to remedy this scandalous condition of things, and, although something was done in the right direction, the bulk of the evils were at that time insurmountable.

A recent effort has met with more success. The fringe business appears to have gone bodily to France, and the vested interests which stood in the way of improving the choir became purchaseable. By the generous aid of the patron, the Rev. F. P. Phillips, and the energy of the rector, the Rev. W. Panckridge, and churchwardens, assisted by the parishioners, and in a limited sense by the public, those interests have been in part acquired. The freehold of the factory has been purchased and the accretions which conceal the north wall of the choir have come into the hands of the committee. Further, the blacksmith's shop has been bought by trustees, who hold it in reversion to the church authorities if within a reasonable time the purchase-money is forthcoming. So that the prospects of the church, if not very bright, are yet fairly hopeful. Its structural condition calls for immediate action, for the rain pours through the roof, which has been patched until it can be patched no more, and the contiguity of the disused factory, with its complicated network of floors and partitions, is a standing risk of fire, a cause of destruction from which the church has already frequently suffered.

The work of preserving what remains of the sacred fabric, and adapting it more perfectly for its proper use, has been entrusted to Mr. Aston Webb, and his proposals may be ascertained from his published Report to the Executive Committee. They are divided into sections in the order of urgency:—

1. The completion of the apse, consequent upon the removal of the intruding factory.
2. The re-roofing of the church (which we should have thought should have come first: but he has no doubt good reason for giving it a second place).
3. The removal of the boys' school, now held in the north triforium.
4. The removal of the forge and of the present vestry, and the rebuilding of shallow north and south transepts.
5. Repairs to the west end, and uncovering the remains of the nave.


THE PRIORY CHURCH OF ST BARTHOLOMEW THE GREAT
CONJECTURAL RESTORATION OF THE BUILDINGS AS EXISTING IN
PRIOR BOLTON'S TIME ABOUT A.D. 1530.
LADY CHAPEL
NOW A FRINGE MANUFACTORY
CRYPT UNDER
CANONS CEMETERY
LESSER CLOSE
IN WHICH WAS SITUATED THE PRIOR'S STABLES
MULBERRY GARDENS.
THESE CHAPELS ARE ENTIRELY CONJECTURAL
PRESBYTERY
FOUNDER'S TOMB
CHAPEL
PULPIT DESTROYED 1660
NORTH AMBULATORY
SOUTH AMBULATORY
SACRISTY
RITUAL CHOIR
CENTRAL TOWER OVER DESTROYED 1628 PROBABLY REBUILT BY PRIOR BOLTON
NOW A FORGE
NORTH TRANSEPT.
DESTROYED BY FIRE 1830
NOW THE GREEN CHURCHYARD
SOUTH TRANSEPT
DESTROYED BY FIRE 1830
SLYPE
CHAPTER HOUSE
CALLED BY SOME THE CHAPEL OF ST BARTHOLOMEW
DESTROYED BY FIRE 1830.
DORMITORY OVER COMMON ROOM
CRYPT DESTROYED DURING THE BUILDING OF THE OFFICES OF THE CITY OF LONDON UNION
EAST CLOISTER LONG USED AS STABLING PULLED DOWN AUG. 8 1834. GALLERIES OR STUDIES OVER
PARISH ALTAR
NOTE. THIS PLAN IS BELIEVED TO BE CORRECT IN ITS MAIN LINES BUT DOES NOT PRETEND TO MINUTE ACCURACY IN DETAIL.
NORTH AISLE
NAVE ERECTED ABT 1250.
SOUTH AISLE
CLOISTER GARTH
REFECTORY
BARTHOLOMEW CLOSE
BUTTERY
KITCHEN
OUTER PARLOR
PROBABLE POSITION OF PRIORS LODGINGS
THE EXACT EXTENT OF THE NAVE IS AT PRESENT UNASCERTAINED
PRECINCT WALL
POSTERN GATE
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6. Re-seating and furniture.

7. Restoration of the Lady-chapel, which it is hoped may some day be used as a Guild Chapel in connexion with a community associated with the hospital.

The interior view, which is reproduced in this number from a drawing in the present Royal Academy Exhibition, shows the general effect of the proposed works so far as the choir is concerned. The jambs of the fourteenth-century east window have been retained, and an elliptical arch turned from side to side, carrying a wall, and preserving the tradition of the square east end. The polygonal triforium and clearstory are carried round behind this sanctuary arch, and revive what must have been the general effect of the original design, —thus preserving "*all* the present traces of the architectural history of that portion of the building."

The laying bare of the remains of the nave would, no doubt, "add very greatly to the architectural and historical interest of the church"; and it might be formed into a pleasant approach, a bright and quiet spot in a crowded and noisy neighbourhood.

We confess that, looking to all the conditions of the problem, we cannot see a better solution of it than that proposed by Mr. Webb. It is, of course, arguable that, having obtained possession of the church and its more immediate surroundings, we should leave it to tell its own tale of the changes and vicissitudes through which it has passed; that everything about it is of historic interest, and, therefore, sacred. This is an intelligible view of the case. But it is attended with some inconveniences. For it would not only extend to the ugly and incongruous cast-iron columns and wrought-iron girder, erected with an avowedly temporary object a quarter of a century ago; but to be quite logical, to the dust deposited yesterday, and the rain-stains on floor and walls. They have now all become historical, and there would appear to be nothing for it but to enclose the whole in a huge case, protect it from the weather, and let it sink into, by no means "unperceived," decay.

But there is another side to the medal. This church is far from being a mere curiosity fit only for a museum. It is the centre of a remarkably active ecclesiastical life. Shall its power for spiritual good be paralysed out of a sentimental regard for the structure as a mere work of art, or, rather, of those portions which have no art to recommend them? That would, indeed, be giving the devout parishioners stones for bread. The builders of the church did not act thus. They never hesitated to destroy the material church if they could enlarge the sphere of its spiritual usefulness, and we find the fragments of their Norman choir built into the body of the Lady-chapel, which they added to it.

We take the common-sense view of the situation to be that which the responsible authorities have adopted. To maintain every ancient feature; to repair what is reparable, and to replace what is not; and to fit the whole, according to our lights, to the needs and decencies of Christian worship.

The present proposals do not appear to disturb the really ancient work. The new work will be distinctly new, and carefully differentiated from the old, and it can scarcely be contended, in the face of Mr. Webb's designs, that we or our posterity will be the loser by the substitution of his nice art for the uncouth barbarisms which it will replace.

It happens that in 1791 Mr. Thomas Hardwicke prepared a series of careful drawings, showing the then existing state of the church and its allied buildings, and these drawings have been preserved in the library of the Society of Antiquaries. The present state of the buildings has been delineated with equal accuracy, and these drawings will be placed in the same custody. The history of the church will thus be preserved and recorded with exceptional clearness.* It is very sincerely to be wished that the works now happily commenced may not languish for want of funds, which are sorely needed if all is to be done which it is desirable to do. St. Bartholomew was once very popular, dear to all Englishmen, and especially mariners. His life and martyrdom were the constant theme of preacher, painter, and moralist, and countless churches throughout the land are dedicated in his honour. May we, without suspicion of profanity, commend the work to the particular consideration of the Worshipful Company of Skinners, and in sober seriousness to every worshipful City Company whatever. There are many reasons why Englishmen of all shades should combine to help the work. Associations of all kinds cluster round the spot. Hogarth was baptised here, and Milton lived in the close hard by. It was not his wont to join in public worship, but the solemn swell of the organ and the melody of the bells must have fallen gratefully on his ear in his time of trial and seclusion. We have, however, not half the necessary space to touch upon all that might be said on this side of the subject. We heartily sympathise with those who are engaged in this difficult work, and hope at no distant date to congratulate them on its successful accomplishment.

* On the 3rd of May the Lord Mayor, sheriffs, and a distinguished company visited the church, and listened to two short lectures on its history and peculiarities. Immediately after that, it was handed over to Messrs. Dove, the well-known church builders, for the commencement of the first portion of the work.

THE INDIAN AND COLONIAL EXHIBITION.

CONSIDERING the unfinished state, or even almost uncommenced state, of the arrangement of a great part of the Exhibition only two or three weeks ago, the stage of completeness which it had reached on the day of the opening speaks strongly indeed for the energy and industry of those who have been occupied in the preparations for the opening ceremony, which has been fully described in the daily papers. Those who have already visited it will, we have no doubt, consider that our prediction as to its high interest and beauty is fully borne out, as regards the Indian section to which we especially referred, and which forms by far the largest department of the Exhibition. The Colonial courts contain an immense amount of matter of practical interest, with which, so far as it touches on the subjects in which our readers are specially interested, we shall be able to deal from time to time during the progress of the Exhibition. The section of primary interest, however, is the series of Indian courts, which in themselves include a wealth of objects of art of all kinds, many of which it is impossible even to glance at in a general article; and perhaps the best thing we can do this week is to devote a few remarks to the exceedingly interesting series of screens which line the great avenue of the Exhibition, and which approach more nearly to the subject of architecture than anything else in the Exhibition, except the Indian Palace, of which a word hereafter.

The main avenue is entered through the arcade of a transverse screen or gateway, contributed by the Maharaja of Jeypore, and carved by his subjects; a wooden erection, of which almost every portion of the construction is covered with carved ornament, and side bays filled in with carved open work of foliated patterns. Among inscriptions carved on the beams is one, on the side facing the avenue, "Ex Oriente lux," a motto which comes in appropriately in face of the array of varied and beautiful work stretching before the spectator.

The avenue is classified into "courts" of the districts represented, but not divided by any cross lines of screens except those at the top and bottom. On the left, after entering through the gateway, we find the Jeypore side screen, an erection of Saracenic character (which character naturally pervades a good deal of the work exhibited in the architectural screens) of dark wood elaborately carved, and further decorated by tile paintings let in as panels. The various workmen, we are told, were left to exercise their own individual taste in the portions on which they were employed, subject to general control of a master-workman, being only directed to employ as great a variety of patterns as possible, and to work on traditional lines. Opposite to this is the Kotah screen, of a general design copied from old buildings in the city of Kotah, a beautiful piece of work, with ivory inlay on dark Shisham wood; the main feature is a many-foliated arch, with the spandrels filled with inlaid flower-work of rather naturalistic type; the whole forms a charming example of modern Hindu work, delicate and graceful in its detail, and very rich in its general effect. Returning to the left, we find next the Bhartpur, Karauli, and Dholpur screen, a red sandstone architrave and false arch (there comes in the "false note" of so much Eastern architectural detail), a low-centred arch with small foliations near the springing only; over this is a frieze of pierced panels of geometrical design. The style is the result of a combination of details from various buildings in the neighbourhood, "a representation of local architecture in details, but not as a whole." It is of red sandstone from the quarries near Karauli, and is executed by local masons under the supervision of the State Public Works Department. The Ulwar screen, next to these, is of marble, with bracket capitals, of Hindu design, and taken from the Ulwar Palace. A dark-veined marble lintel supports a frieze of marble panels of perforated designs.

Returning to the north side, the next screen to that of Kotah is that of Ajmere, a model, and carved in wood and painted white to represent as nearly as possible the ordinary street architecture of the town, which is in marble or plaster, the special feature being a two-storied over-hanging cornice, with rows of pendent bud-like ornaments. Executed as it is and painted, it looks rather gimcrack, and the forms and details are not very beautiful. Below this comes the Bikanir screen, a wooden structure, which shows a brilliant effect of gold arabesques on white and red grounds, of the method of forming which the following description is given in the catalogue:—

"On the surface of the wood, which had been previously well scrubbed with liquid clay and allowed to dry, the outlines of a flower-pattern were stencilled with a bag of powdered charcoal through perforated paper. Successive layers of liquid clay were then applied with small squirrel's-hair brushes within the outlines of the pattern, each layer being allowed to dry before the next application, until a raised surface bringing out the stalks, leaves, and petals with sufficient distinctness had been produced. The whole surface was then fixed by a coat of paint, and when this was dry, gold leaf was applied over all. The ground-work, black, with a red border, on the portion intended to face the central avenue and the adjacent courts of Central India and Ajmere, and red, with a black border, in the interior of the Bikanir bays, was then painted in, the flower-pattern standing out in gilt relief."

After this we come to Central India, whose screens appear on both sides of the avenue. This embraces a district of about 75,000 square miles, but does not send contributions of proportional interest to its area. The screen is in a mixture of styles, exhibiting a good many figures in niches, some of them Buddhist, some Hindu in style; the supports and lintels are of wood, but on these are carried carved marble panels, containing some beautifully-executed floral ornament, intermixed with figures of a rather primitive kind. Attached to the side portions of this screen on the right are perforated panels of stone from Gwalior, better, on the whole, in design than in workmanship, which does not seem to represent the best that Indian carvers can accomplish

The Bombay screen, next to this, which was constructed from a general design made by Mr. Griffiths, the Superintendent of the Bombay School of Art, was designed to illustrate the wood-carving of the Bombay Presidency; it is very flat work, constructionally, containing panels of geometrical ornament and also some very beautiful and delicately carved open-work panels of floral design; it is rather bare in appearance, and one of the least architectural looking of the screens. The contrary may be said of the Bhavnagar screen, which is a solid erection of rather a "lych-gate" type, with details taken from the mosques of Ahmedabad; the superstructure is a tolerably massive erection overhanging the supporting columns boldly, and steadied by straight-lined brackets

projecting on either side transversely from the pillars; these brackets, however, though constructional features, are one mass of carving, rich to look at, but entirely destroying their expression as pieces of construction: the "false note" again. The Baroda screen, opposite, is very similar in general character, but the brackets are not straight-lined; they are curved members, branching out into buds, and remind one rather of the ordinary bracket-capital placed transversely. On the Bhavnagar side should be noticed the curious and effective cornice ornaments, evidently suggested by the elephant's trunk as a hint, but conventionalised into a very effective and suitable feature of ornamentation. From Bengal comes a screen of imitation brickwork, arranged in an arcade form, and decorated with plates of *repoussé* metal-work fixed on the walls at intervals, and according to a symmetrical scheme; the effect is rather unsatisfactory, the metal decorations seem an afterthought. On the right-hand side, opposite this, Bengal is also represented by an imitation brick erection of very peculiar but also clumsy type, at least as far as the piers are concerned, which are nearly all cap and base projections; the archivolts are decorated with a triple row of cusped ornamentation; the whole is lined out in white on the background. Next, on the left side, come the screens of Agra and Lucknow, of dark, elaborately-carved wood with foliated arches, and the open panels of the frieze decorated by richly-coloured stuffs draped on them. Opposite to these, on the right, the Nepaul Court shows one of the most beautiful of all the screens; columns with capitals of quasi-Classic form, with angle volutes, the shafts ornamented with vertical bands of delicate and minute carving; the panels above finely carved, especially two which show designs formed of intertwined "dragons" in low relief. Near this stands, in the centre of the avenue, the Baroda pigeon-house, which attracted so much admiration from "Robert" in *Punch*; an erection carried on a tapered octagonal column covered with carving, the base also carved; the pigeon-house is an arcaded erection, very pretty in design, steadied by long brackets from the column, which are, as in other cases, too much carved for true constructional expression. But the whole affair is a remarkably fine piece of work, and one is not surprised to learn that it is not intended as a mere piece of farmyard furniture, but for the delectation of pigeons which have the good luck to be considered "sacred"; in fact its elaboration springs from just the same pious fervour as that which led to the beautifying of our own mediæval shrines.

In the Punjab screens, which occupy both sides of the way below this point, is to be seen some very rich and beautiful work. The screen on one side is in Shisham wood, and that on the other hand in deodar. Both are the work of Sikh carpenters; they are carried on elegant columns, with brackets, and the upper portion presents a long series of very delicately-wrought panels perforated in geometric patterns, almost exactly like Arabic work. Some of the other wood-work exhibited in this Section is splendidly rich; there are one or two doors fixed on the walls behind, showing arch over arch, spandrel over spandrel, all covered with rich and minute carving. The Kashmir screen is similar in general style, but not quite equal in design, except the brackets, which are the weak point of the Punjab screen. The following details in regard to it are extracted from the catalogue:—

"The screen for the Kashmir and Frontier States' Court is copied from the verandah of an old wooden mosque near Chakoti, on the Kashmir Murree Road, to which the attention of travellers is invited in Ince's handbook. The date of its erection was not, as far as I could find, anywhere marked on the building, but tradition and the character of the carving seem to point to the earlier part of the last century. The pillars, brackets, and architrave beam of the screen are almost an exact copy of the original, both in design and proportion. The side bays, 6 ft. 3 in. each, are identical, and the front bays differ only in that the original arches, each 5 ft. 2½ in. span, have become pillars 10 ft. apart, surmounted by brackets. The railing at the top is pinjra work, such as is commonly made and used throughout Kashmir at the present day. The material is deodar wood."

After this follow the screens of the central provinces, carved in wood, and the work of Nagpur native carpenters. These are very rich, heavy, and elaborate erections, in teak, supported by what may be called square rusticated pillars (only that the rusticated surfaces are carved), with graceful columns in front of them; the upper part is carried on very heavy brackets, both transverse and longitudinal (as in Japanese construction), in double tiers, and with carved lions between the upper and lower brackets; the cornice contains some beautiful floral carving in low relief.

The Assam screen is an exception to the rest in being rustic work, formed of bamboo supports grouped in fours, with light woven cane patterns in the superstructure. Burmah shows a peculiar and barbaric-looking structure, on red and gold columns with black bases; carved brackets forming a straight line, parallel with the lintel, at the top; the frieze is decorated with embroidery and figures on a red ground. The best part of this screen is the carved floral ornament, which is fine and bold, and with a remarkable resemblance to good Renaissance work in feeling. Madras, which, like Burmah, occupies both sides of the avenue, shows a curious type of column, octagonal, and with no projections beyond the shaft line; just beneath the capital the shaft is cut into a round knob form with pendant wreaths leaving clear-cut open spaces behind them: rather fragile looking. The columns are fluted, interrupted by bands of carved ornament; the cornice is very elaborately carved; the whole is intended as a representation of the Dravidian style of architecture. It is executed in teak by Madras carpenters, from a design prepared by the Superintendent of the Madras School of Arts.

On the left, below this, comes the sumptuous screen of Hyderabad, the least architectural of all, as it is only a frameword carried by plain gilded stiles and transoms. The interspaces are occupied by panels, some showing dwarf foliated arches, some square, some with a circular dished panel in the centre, all filled with metal or lacquered flower ornament of varied and beautiful detail. The second and sixth arches are of Bidri ware, blackened pewter inlaid with gold, silver, and copper; the third and fifth are entirely of lacquer work. The Mysore screen, opposite to this, is a curious contrast, mostly of plain wood surfaces, the frieze ornamented with paintings. Hyderabad furnishes the screen closing the vista, an erection gilt all over, of very Moorish character, on columns ornamented with chevrons in red, green, and gold; the spandrels of the foliated arches are ornamented with, on the contrary, very Renaissance-looking scroll wreaths on a light blue ground. The thing is a little gewgaw, and there is a made-up look about it.

The central point of the Indian work, opposite the end of Old London, is the Indian palace and courtyard, entered by the splendid marble gateway, originally designed by Major Keith for the Calcutta Exhibition, and executed under his superintendence by native masons, at Gwalior. It is a large archway, with carved engaged columns, and an archivolt decorated by pendent bud ornaments, the spandrels filled with elaborate conventional floral ornament, with an elephant in bas-relief, as if entangled among the ornament, in each spandrel. Within this is the courtyard, surrounded by an arcade, and from this a pillared porch gives entrance to the octagon hall, formerly occupied by the water companies' exhibits, but which is now seen in a subdued but rich glory of beautiful textiles, not only on the walls but overhead, a soft light being admitted through thin hangings covering the centre space. In the centre is a fountain or cistern, the water bubbling up in the centre, but always kept at a level with the star-shaped rim, so that it looks like a large crystal set in an ornamental border in the centre of the apartment. Steps lead from this to the highly-decorated room overlooking the courtyard, the elaborate woodwork of which was made by two natives of Bhera (Punjab) in the Exhibition. We must describe this more in detail another time. The whole makes a singularly beautiful interior, conveying a sense of repose which cheats one into the belief of being far away from the rattle and bustle of London.

NOTES.

THE railway companies are, to say the least, ill-advised as to the tactics they are adopting in order to defeat the Railway and Canal Traffic Bill. They persist in speaking of the measure as an attack upon their property, while it is really directed against their method of management. Indeed, it may fairly be said that the long-felt desire for reform, which has at last found definite expression, is not so much of an attack as it is represented to be. It is certain that Mr. Mundella never had that idea in framing the Bill, but desired rather to legally remedy an unsatisfactory state of things which has grown up through the vague and insufficient character of previous legislation. It appears that railway *employés* have been told that the Bill is aimed against them as well as the proprietors, and mass meetings have recently been held at various stations, protesting against it. It is very certain that the passing of the measure would not reduce the volume of traffic, and, as the reverse of this would, in all probability, happen, and the staff would have to be increased rather than reduced, the talk about their employment being imperilled is altogether beside the mark. If it should unfortunately happen that the directors considered it necessary to reduce the rate of wages, such a step would certainly emphasise their statement that this result would follow the passing of the Bill, but it would be no proof that such a result was "aimed at," or even contemplated. Indeed, Mr. Mundella takes every opportunity of repeating that his aim is justice to all; and Lord Henniker, who is one of the foremost champions of the Bill, has, like Sir B. Samuelson, a considerable stake in the railways, and will not be likely to uphold anything of a "confiscatory" nature.

THE Queen's Bench Division has just decided that Sec. 156 of the Public Health Act, 1875, does not apply to new buildings upon land never before built on. That section enacts that it shall not be lawful, "without the written consent of the urban authority, to bring forward any house or building forming part of any street or any part thereof, beyond the front wall of the house or building on either side thereof, nor to build any addition thereto beyond the front of the house or building on either side of the same." In the case of Williams *v.* The Wallasey Local Board, which we are now noticing, the Local Board approved of a certain line on plans for the erection of a new street as its frontage line. Some of the houses were built further back than such line, and the next proprietor built his up to the line. He was then proceeded against under this section, and the justices convicted him of offending against it. This decision the Queen's Bench Division have reversed, on the ground that if it were upheld "the person who first erects buildings in such a place as this can, in fact, prescribe the line of frontage to be followed by other persons who may begin to build at a subsequent time." This decision seems to be reasonable, for the local authority fix the frontage line, but if a person chooses to build at a distance behind such line, that is clearly no reason why his neighbours should lose the advantage of the ground which is available for their buildings.

WHEN a Local Board gives over a road, or highway, or any part of it, for the purpose of, and during the time it is, being repaired under contract, that Board very properly does not relieve itself for one moment of the responsibility to the public for any accident or damages which may arise in consequence of the condition of the road. The Board may, and very often does, specify that the contractor

shall be liable to the Board, and indemnify it against loss through any carelessness on his part. Matters would, indeed, get into a very confused state if a Board could relegate to a contractor for any time its duty to the public of maintaining in a good and safe condition the roads within its jurisdiction. But there is in the Public Health Act another point interesting to contractors, but evidently not generally well known, and that is that no action for damages through accident on a road against a Local Board can be instituted if six months have expired from the date of the occurrence of the accruing cause in the case. The application of this provision was illustrated in a case which was entered for hearing in the Brentford County Court. A butcher in Chiswick claimed damages from the Local Board for injury to a horse which had, in February, 1885, slipped at a hole in the road, which was being repaired by the contractor. At the last moment it was discovered that he had failed to comply with the requirement of the Public Health Act, viz., to institute proceedings within six months of the accident or accruing cause, and he very wisely, on the advice of his solicitor, withdrew the case. Not a few persons are acquainted with the law's delays; but here the danger or fault lay in delaying to set the legal machinery in motion.

A CORRESPONDENT of the *Times* last week attacked strongly the reality of Dr. Schliemann's pre-historic discoveries at Mycenæ and Tiryns, quoting in support of his views Mr. Penrose and a mysterious "Oxford man," whose connexion with that University seems to have been considered conclusive as to his archæological infallibility. From what we have heard direct from Mr. Penrose, however, we gather that he considers there are good grounds for questioning the antiquity attributed to the walls uncovered at the top of the hill or citadel of Tiryns. The chapter on these in the work on Tiryns was not written, as our readers may remember, by Dr. Schliemann himself, but by Dr. Dörpfeld, who is one of the most learned architectural archæologists in Germany, but probably liable to be carried away by that desire to make remarkable discoveries to which German archæological enthusiasm is somewhat prone. We declined to accept some of his theories about objects found at Tiryns at the first, though regarding him as a safe and credible witness in the main. Mr. Penrose's reason for doubting the Pelasgic date of the Tiryns excavated walls is founded on the nature of the masonry, containing many small stones mingled with bricks, the presence of sawn stone instead of the rough-hewn finish of the undoubted Pelasgic structures, and the evidence of the use of iron tools in drilling holes in the stone. We are certainly ready to accept Mr. Penrose as an exceptionally competent and unprejudiced witness, with probably a much cooler judgment than Dr. Dörpfeld; and the idea that the walls of a pre-historic palace have been unearthed must, at all events, be held to be matter for a suspension of opinion. It does not necessarily follow, however, that the plan of the habitations at Tiryns may not be in great measure in accord with that of an older structure previous to the walls that have been uncovered, the remains of which may lie deeper. Dr. Schliemann and Dr. Dörpfeld had better excavate to a lower stratum, and see what that produces.

THE subject of Dr. Dörpfeld's essay was taken up by Dr. Jebb in an able paper read before the Hellenic Society on Thursday afternoon, not in regard to the archæological questions of date, nature of the walling, &c., but in regard to the degree in which Dr. Dörpfeld's plan and explanation of the Tiryns remains could be reconciled with the description of the Homeric house in the Odyssey. By a series of carefully-arranged quotations Dr. Jebb made out a very strong, if not unanswerable case, in favour of the idea that the women's apartment in the archaic Greek house opened from the back of and directly out of the great hall or men's apartment, and not by the circuitous route necessary on Dr. Dörpfeld's theory. Eurycleia is called out from the women's apartment, for instance, by a speaker in the hall, and immediately appears; Odysseus, at the entry of the hall (while still in disguise), is summoned to the presence of Penelope, as a humble guest who has been wronged, and scruples to pass the crowd of insolent suitors in the hall,—as if he must do so to get to the women's apartments. These were only one or two of the passages cited, the whole of which go to make up a very strong body of evidence in favour of Dr. Jebb's view.

THE scene at St. Bartholomew's Church on Monday afternoon, where the Lord Mayor went to give the countenance of the municipal authorities to the project for the preservation and partial restoration of the old church, was a very interesting and striking one. The church was crowded, and Dr. Norman Moore gave a short account of its foundation and history, and the names of some of those who had been connected with or interested in it, including that of Henry Fitzailwin, the first Mayor of London, whose signature is appended as a witness to the "ordinance of Richard de Ely, Bishop of London, in the year 1198, laying down rules for the guidance of the master or proctor of the hospital connected with the priory. Mr. Aston Webb then gave a short lecture on the architectural points in the building, explaining what was proposed to be done. A collection for the fund was made at the conclusion. We hope that the Rector, who has shown so much energy in endeavouring to arouse public interest in the safety and preservation of this remarkable church, is about to see the reward of his labours.

IN reference to the threatened destruction, or partial destruction, of the Roman Baths at Bath, the Leicester Literary and Philosophical Society has passed the following resolution:—"The members of the Archæological section of the Leicester Literary and Philosophical Society hear with surprise and regret that the Roman Baths at Bath are threatened with partial destruction in consequence of some new scheme of public works; and they beg most earnestly to express a hope that the Corporation of Bath may be able to modify their plans, and save these unique and interesting memorials of their Roman predecessors." We entirely agree with the spirit of the resolution. It is not always desirable or possible to allow ancient remains to stand in the way of modern improvements, but the Roman remains at Bath are of such peculiar and almost unique interest that every effort should be made to preserve them, even at the cost of some sacrifice of public convenience.

THE restoration of the beautiful cloisters of St. Juan de los Reyes at Toledo, in Spain, which were brutally mutilated by the French, is progressing most satisfactorily, under the skilful supervision of the architect, Señor Arturo Melida. The north wall, which suffered more than any other part, is already completely restored, the workmen now being busy on the north and west arcades. In one of the bays on the western side, an important addition has been made in place of the present projecting eaves, viz., an elegant traceried balustrade, with pinnacles running up at each of the buttresses between the openings. When this is carried round all four sides, as Señor Melida intends to do, and the carving and tracery of the other sides are completed, these cloisters will be able to vie with any others in the world for grace of composition and beauty of detail. The stone being used for the new work is a dazzling white limestone, which, when fresh from the quarry, is of a soft chalky nature; but the architect is confident that it will harden by exposure to the air, asserting, as his opinion, that the old stone was as soft when first carved,—a theory which is supported by the extreme delicacy of the original carving.

WE learn from a paragraph in the *Venice News* (an English newspaper published in Venice) that the crypt of the Basilica of St. Mark is showing signs of serious injury from the infiltration of water, and a committee of architects has been appointed to investigate the circumstance and provide some remedy. It is proposed to undertake the restoration of the central portion of the pavement of the crypt, preserving, it is said, its ancient character, in order to repair the settlements, which have become, it is alleged, both serious and dangerous. The editor of the *Venice News* reports that he has made a careful examination of the pavement in question, and that he can find no ground for the apprehensions entertained by the Restoration Committee; the well-known undulations of the flooring resulting, in his opinion, from settlements which are not recent, and which do not appear to be increasing to any serious extent. He further points out that if the pavement is taken up and relaid, its ancient character must be necessarily destroyed, and that, if it is to be tampered with at all, it may just as well be replaced by a pavement of entirely modern design,—an opinion in which we concur.

THE "Société Centrale des Architectes" of France has formed a commission for inquiry into the causes of the present unfortunate condition of the Building Industries in France. The President of the Society is M. Bailly, and the chief secretary M. Paul Wallon; MM. Hamant and Paul Sédille are the vice-presidents, and the Commission includes other well-known French architects.

IT is proposed to erect a large block of residential chambers on the south side of Piccadilly, between the Bath Hotel, at the corner of Arlington-street, and the Green Park, extending back to Arlington-street, on ground belonging to Lord Walsingham. Mr. W. O. Milne is the architect.

THE exhibition of the Royal Society of Painters in Water Colours, in spite of the gap made by the absence of any contributions by Mrs. Allingham, is one of the best which the Society has ever opened. Mr. Alfred Hunt sends several works in his highest style; two especially to be noted, "On the North-East Coast" (120), and "Warkworth Castle" (80), a distant view of the castle, with a wonderful bit of distant sea; the idea of space and distance conveyed in these two small drawings is remarkable. Mr. G. P. Boyce has two or three scenes from Vézelay and its neighbourhood, which are in his best manner. Mr. Eyre Walker's drawings, especially "The Edge of the Combe" (21), are among the finest he has exhibited. Mr. Poynter has a very interesting study of a riverside town with a picturesque entanglement of buildings of all kinds, under the title "The Ferry" (62). Mr. Naftel has surpassed himself in various small but exquisite drawings, "A Golden Dream" (87), and two drawings framed together, "Bridge on the Road to Idwall" and "Dungeon Ghyll" (56). Mr. Herbert Marshall has an exceptionally fine London picture of St. Botolph's churchyard, Aldersgate. Among others may be mentioned, "At the Foot of Ben Nevis" (72), and "Sunset Glow on the Torridon Hills" (161), by Mr. Colin Bent Phillips, a new name to us, and that of an artist of power, with a style of his own. "The Jungfrau" (190), by Mr. W. Collingwood; "On the Cliffs, Cornwall" (194), by Mr. Otto Weber; "The Ponte alle Grazia before its Demolition, Florence" (121), by Mr. Albert Goodwin; "Early Morning at the Bathing Ghâts, Benares" (100), by Mr. Walter Duncan; "Holiday Folk" (69), figures in a garden full of poppies, by Mr. E. K. Johnson, with much more character and refinement in the figures than we have often noticed in this artist's works; "Pont Aberglaslyn, North Wales" (150), by Mr. Clarence Whaite, a little theatrical in effect of light, but a remarkable drawing. It is interesting to find Mr. H. Moore appearing on this occasion as a flower-painter, with two or three very good examples. Many more might be mentioned; the exhibition is full of good work.

IF things go on at their present rate, there will soon be an end of national artistic style, and we must be content to see the art of the whole world little by little Europeanised. Japanese art was hailed, not so many years ago, as a hitherto neglected source of fresh, spontaneous, and indigenous art. It soon appeared that the Japanese, in some matters, were as ready to imitate us as we were to imitate them; but it would hardly have been expected a few years ago that the Japanese Government would have taken such a revolutionary step as to invite architects from Berlin to design and plan their new public buildings and palaces. This, however, we are informed, is the case; so we presume that is the knell of Japanese architecture as a national style. It is possible, however, that local developments from Classic and Gothic materials may arise in different countries in time. This appears to be, to some extent, the case in America already.

HAVING looked into the Whistler Exhibition, at Messrs. Dowdeswell's, which, as we said, was too crowded to get into last week, we can record that the "Harmony in Brown and Gold" in the decoration of the room is exceedingly tasteful and pleasant to the eye, and that the frames of the drawings are uniformly tasteful and well executed, and ample in size. For the drawings themselves, there are some pretty outline sketches of figures from the life, and a number of ideas for landscapes in a very inchoate state. What the crowd who rushed and struggled to see these thought of them we, of course, can only conjecture; but we could imagine that Mr. Whistler, who to his other gifts adds a fine sense of humour, is laughing at them in his sleeve.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

WE passed over in our previous review an interesting pencil drawing of the interior of South Marston Church, as restored (1,600) by Mr. J. Belcher. We like to meet a pencil drawing sometimes; this medium of drawing is getting neglected. As in some other restoration drawings, there is nothing here to show how much has been restored and how much is original; we presume that the roof, with its shaft member in the place of a king-post, and apparently supported on the cambered tie-beam, is ancient. Passing on to where we broke off in our first article, we find,—

1,644, "New Catholic Church, Mount Vernon, Liverpool"; Messrs. Goldie, Child, & Goldie. This, which is hung too high to be well seen, is a good monochrome drawing of a church in geometric Gothic style, with a large traceried west window and long porch narthex-wise under it, hardly, to our thinking, sufficiently tied into the main design, architecturally speaking. A large octagon turret or small octagon tower, attached to the south-west angle, solid below and with a window-stage at the top, groups well with the rest. The whole design, without any special originality, is solid in appearance, and composes pleasantly.

1,647, "All Saints' Church, Gosforth, Newcastle-on-Tyne"; Mr. R. J. Johnson. A freely executed pen-and-ink drawing of a rather peculiar church design, all the windows, except those in the tower and east end, being flat-headed; the aisles in the style of the late Gothic Domestic windows, and coming close up to the string-course under the cornice. The clearstory windows have a tracery less late in character, but fitting in well enough with the square heads. The parapets of tower and nave are battlemented. The design looks like an experiment to show that, as a matter of practical adaptability, the square-headed window in a Gothic church may have its advantages and may be introduced with good architectural effect as the prevailing form of window-head.

1,654, "Church Schools and Presbytery of St. Joseph, West Hartlepool"; Messrs. Dunn and Hansom. Hung high; apparently a solid-looking brick church, with a large tower at the north-west angle, which is rather spoiled by the stoppage of the buttresses at a marked horizontal line halfway up, which cuts the tower into two stages not sufficiently connected in their anatomy, and the projections for the staircase hang on to the tower in a rather accidental manner. We like to see such adjuncts look as if they were a necessary part of the whole scheme of design, inseparably connected with it, not as if they might be taken away and put on another side at pleasure and just as conveniently. The deep buttresses on the west front give force to this part of the design, the whole of which is of the solid and massive character suitable to a church of size and importance.

1,658, "View of a New Church, with Schools, &c., below it, about to be erected in a poor part of West Ham, Essex," Mr. J. Oldrid Scott. We presume the statement as to the "poor part" is intended as an explanatory comment on the plain and unadorned character of the work. There should have been a small plan and section appended (why do architects neglect this so much in their Academy contributions?), to show the arrangement of the building, the design of which is rather peculiar. The hint of a nave and aisle arrangement is kept up, but the aisle is very narrow, and massive buttresses rise above the whole width of its roof, against the clearstory-wall, and are presumably carried down to the ground. We preume, therefore, that these apparent aisle windows are really the windows of the "Schools below," divided into shallow bays by internal buttresses, and that the church is on the upper floor and lighted by what appear to be clearstory windows externally; but it would have been better if this had been shown by drawings. The church is apparently a brick one, very plain; the school (?) windows are of Perpendicular tracery type, with low straight-lined Pointed arches in brick; the church windows lancet shape, with a centre mullion and tracery in the head, and placed beneath Pointed relieving arches carried from buttress to buttress. The real church has apparently, from the perspective view, two aisles of equal height, with an arcade between; at least, there is a bold projecting buttress at the centre of the west end, which can have no other meaning. The building is apparently brick, very simple, but not ineffective, and very suitable in design for its purpose and position.

1,664, "Eight architectural designs:— (1) Screens, Whiston Church; (2) Graffham Church tower; (3) American Church, Paris: pulpit; (4) St. Mary's, Southampton: west front; (5) American Church, Paris: vestry-room; (6) Wendover Church: screen; (7) St. Peter's, Mancroft: flêche; (8) St. Thomas's, Salisbury: pulpit." Mr. Arthur E. Street. Of these, No. 5 is a drawing of an apparently large room, with an open-timber roof, effectively treated; there are, however, no figures introduced to scale it, and the apparent size may be deceptive. The sheet of sketches is generally in true Gothic feeling, but a little heavily drawn; not effective, at all events, at the height at which they are hung.

1,668, "St. Andrew's Church, Willesden Green: North-east View," Mr. Jas. Brooks. This charming church is shown in an equally charming drawing, a reproduction of which was published in the *Builder* for January 2 last. It is to students a valuable illustration of the satisfactory architectural effect that may be produced by the simplest means, and with almost the entire absence of what is called "ornament," by the carefully-studied arrangement and proportion of windows, string-courses, and buttresses, so as to form a harmonious whole. The east end, with its five-light lancet window included under one wall-arch, and the development of the ends of the north and south walls, above the string-course, into shallow buttresses ending in simple gablets, is quite Greek in spirit, in its combined simplicity and elegance.

1672, "Saundby Church, near Gainsborough: Interior View," Messrs. W. S. Weatherley & F. E. Jones. This is a small pen-and-ink interior of a chancel with a panelled wooden ceiling with massive moulded and braced principals, and an open-traceried wooden screen of somewhat elaborate late Gothic character; good work, not calling for any special comment, however.

1684, "St. Peter's Church, Streatham: Third scheme for completion of West End Exterior," Mr. G. H. F. Prynne. This shows an octagon-ended baptistery applied to the church so as form a kind of west-end apse, in two stories, the lower story forming a meeting-room, the back portion would not be quite well lighted. On either side of the baptistery projection is a porch, the two portions producing the impression of a narthex cut in two by the baptistery. We complain that the porches, as in one or two other instances we have noticed, are not connected with the main design; merely abutted against the west wall, without any architectural relation or connexion,—otherwise the contemplated additions may be said to be picturesque and practical.

1,699, "Additions and Alterations to St. Ignatius Church, Preston," Messrs. M. E. Hadfield & Son. This is a brilliant coloured drawing, not however conveying any information as to what the additions and alterations consist in. We presume they are in the seating, the stained glass, and the reredos. The general effect is rich and brilliant; the water-colour drawing hardly makes out the details.

1,703, "Church in Gordon-square: West Elevation," Mr. John Belcher. This is an elevation of a west end and a lofty tower and spire with octagonal angle turrets, in orthodox Early English style, and presenting little either for criticism or comment.

1,712, "A Suburban Church," Mr. E. J. Tarver. This drawing, which has been published in our illustration pages, is a clever attempt to assimilate the architectural style of a suburban church to the style of the suburban villa, by way of producing an effect of architectural unity or uniformity. Whether the process tends to the elevation of church architecture, "the wise may make some dram of a scruple, or even a scruple itself."

1,713, "Holy Cross and All Saints' Church, Warley, Essex," Mr. F. W. Tasker. A view of the chancel of an Early Geometrical church, too high to be properly seen. We shall, however, publish some illustrations and a description of this church and what has been done to it shortly.

1,730, "Parish Church, Wootton, near Liverpool," Messrs. Grayson & Ould. Hung high. Apparently a good modern Gothic church, of fourteenth-century style, with a large solid-looking tower.

1,738, "Church of St. James, Spanish-place: Exterior View," Mr. John Kelly. The description ought to have run, "Competition Design for Church," &c.; it is rather misleading to put the title in the catalogue as if it were an executed building. This was the half-French, half-Byzantine design with a dome, which we noticed fully at the time of the competition. It is what may be termed a clever design, but not beautiful; externally, at all events. It would probably have made a good interior.

THE ROYAL ACADEMY EXHIBITION.

ALTHOUGH the works of the President this year are few in number, the two principal ones must rank among the best contributions which Sir F. Leighton has ever made to the Academy. The large painting at the top of Gallery III., "Decorative Painting for a Ceiling" (164), is intended, we believe, for the same house in New York for which Mr. Tadema has designed some of the furniture. It is a triptych, representing on a gold ground the figures of Mnesomyne, Melpomene, and Thalia in the centre compartment, while the side compartments contain, on the right, figures emblematic of the poetry of Revelry or of the Dance, and on the left figures typifying Amatory poetry. Mnesomyne is a seated figure, with a tripod on each side; Melpomene and Thalia are standing, the one draped in blue, the other in red. On each side of the central figure hover winged genii representing Music and Poetry, not chubby children, but youthful boy figures whose delicate nude limbs make a lovely contrast with the gold ground: and in this purely ideal work Sir Frederick's manner of painting flesh with an enamelled smoothness of texture seems quite in keeping. The whole work is full of grace and beauty, both of form and colour, and one can only regret that it should be destined for a ceiling, where it can never be seen so well and to so much advantage as on the wall on which it now hangs. We have always considered that to paint high-class ideal figures on a ceiling is a mistake; no one can look at them comfortably, and from one side of the room they must always be seen wrong way up.

A certain regret also is mixed with our admiration of the other work referred to, the statue entitled "The Sluggard," in the lecture-room. This is a life-size figure of a finely formed man, stretching his arms and somewhat con-

torting his body in an expression of physical laziness. The figure is splendidly modelled; nothing could be finer in its way; but it is almost a pity to see so much artistic power expended on a subject so little elevating or inspiring to the mind; nor, we may add, would a habitual sluggard show the fine muscular condition of this figure. There is, indeed, a certain moral point given to the work by the incident of the laurel wreath trodden under the foot of the figure; but, after all, it is the sluggard that we are to admire, and we do not admire him with a clear conscience. A little statuette in the same room (like "The Sluggard," a bronze) entitled "Needless Alarms," is another contribution of the President's, and a very clever and unusual work, showing a young girl in the attitude of shrinking from and looking over her shoulder at a toad. Like the Sluggard, it is mainly a study in modelling of the figure in a difficult position, and a remarkable success in its kind.

One of the finest and most original works in this year's exhibition is the sculpture group (terra-cotta) in the Central Hall, "The Enchanted Chair," by Mr. Gilbert. As the work of a young sculptor, nothing finer or of greater promise for the future has been seen here for a long time. The "chair" is a mysterious one, resting on dragons, coils, and wings, and in it is a fine female figure, of full contour, in the heaviness of sleep, the head drooped on the right shoulder. The peculiar attitude of the feet also, one of them bent inwards, as if the heel had slipped and unconsciously pivoted round the toe, intensifies the expression of sleep. On the back of the chair stands an eagle, his beak bending forward over the sleeper, his outstretched wings spread grandly on either side of her. This imaginative production is more than a mere piece of fine modelling; it is a real poem in sculpture, such as we seldom see amid the generally prosaic ranks of Royal Academy sculpture.

Mr. Orchardson has distinguished himself this year by a powerful sequel to a former powerful work. This is entitled "Mariage de Convenance: After!" (136). Here the elderly gentleman who sat at one end of that miserable dinner-table in the former well-remembered painting is seated aimlessly before the fire, after dinner (the table now laid for one only) musing on the wretched past, while from the wall behind the portrait of the wife who has deserted him seems to regard him with scorn. Even his favourite Lafite has palled upon him; only one glass has been taken from the decanter on the table. The room and all the accessories are painted with the greatest care, with a realism which never degenerates into hardness or over-finish. The figure itself is an admirable study. There is the history of a wasted life in it. What various critics mean by the faint praise with which they condescend to notice such a work we cannot understand. Here is not only a fine and learned painting, but that kind of insight into human character which makes painting what Mr. Arnold has said poetry ought to be, "a criticism of life," and of how *very* few pictures in this or any Academy exhibition can that be said? Take Mr. Tadema's principal work, for instance, which hangs back to back with this on the wall of the next room, "An Apodyterium" (285). This is, perhaps, the best painted work in the whole exhibition. Mr. Tadema's principal work usually is. The marble floor of the dressing-room, the figures ascending the stairs to the bath-room, the lady in foreground putting the last touch to her costume, the nude seated figure who stoops to unfasten her sandals, the architecture in the sunlit court seen through the door, all these are represented to perfection, but there is not a suggestion of any feeling, any idea, below the brilliant treatment of superficialities. The gifts of art seem capriciously bestowed. To some, who have great gifts in *technique*, soul and spirit are denied, and others strive to express deeper meanings without the technical power to convey them adequately.

Among the pictures that will be remembered in this year's exhibition is Mr. Burne Jones's first contribution since he accepted membership, "The Depths of the Sea" (314), where a mermaid is dragging a drowned man down to her cave, with an expression of vicious triumph on her countenance, which is all the more striking because it is in such strong contrast to the placid faces of a certain type to which this remarkable artist has too much confined himself. The fishy portion of the mermaid is painted in a masterly manner; her tail, which would touch the pebbly bottom if extended, is turned at right angles so as to clear it, in a way which oddly reminds one of the movements of fish as one can watch them in an aquarium. The drowned man is rigid in her arms; the last remains of his breath send up bubbles to the surface above. As a realisation of a world-old fable this is a remarkable work. The same room contains Mr. Dicksee's principal painting, and, in regard to the manner in which it tells its story, the best he has ever contributed to the Academy. Under the title, "Memories" (374), it shows an interior where a widow with her child sits, stirred to sad recollections by the music played by a young woman at the pianoforte. The face of the principal figure is full of pathos; the accessories are carefully studied; the garden seen through the window adds an incident to the scene. This is one of the works in which there is an appeal to the feelings as well as to the eye. Near it hangs one of the best of the class which are addressed only to the eye, Mr. A. Moore's "Silver" (323), a "young person" lightly clad, seated on a sofa covered with a charming pattern, and with an equally effective wall-pattern behind, which we have seen in other works by the same painter. The decorative effect of the whole is lovely. On the opposite wall is Mr. Brett's principal work, "An Argyll Eden" (340), a Scottish coast scene bathed in a flood of almost impossible sunlight, which makes blue shadows everywhere behind the angles of the rocks and among the dense foliage of the hills: a schooner slips quietly along in the middle distance, with scarcely wind enough to stretch her canvas. The sunlight effect we certainly think exaggerated; the foreground (or forewater) with its jutting rocks, is painted with wonderful reality.

Touching on sea paintings, the exhibition contains two masterpieces. Mr. Hook has seldom done anything so fine as the wave about to curl and break in the picture entitled "The Broken Oar" (65); we are conscious of the weight and momentum of the water, and expect to hear the roar it will make in breaking the next moment: the whole picture is full of wind and freshness, and of that smell of salt water which we always seem conscious of in looking at Mr. Hook's sea-pieces. Mr. Moore's "Mount's Bay, early Morning, Summer" (1,094), is an expanse of sea gently undulated by the morning breeze,—cold, dark, and wonderfully liquid-looking; he does not give us the briny air which blows over Mr. Hook's seas; but the depth and the movement of the water are splendidly conveyed, and there is a fascination about the picture, partly arising from the boldness of the attempt to make a large picture out of nothing but water; not the first time Mr. Moore has done it, of course, but he has never been more successful.

Sir John Millais's one contribution (unfortunately) is an admirable and most characteristic portrait of Mr. Barlow, the engraver (190), who was also the central figure of the now well-known picture of "The Ruling Passion." Among other noteworthy portraits of the year are Mr. Holl's "Lord Carrington" (203) and the "Duke of Cleveland" (210), the latter rather exaggerated in manner and expression; we have before remarked that when Mr. Holl gets a sitter with any peculiarity of manner his endeavour after strong character leads to over-accentuation. His portrait of Mr. Chamberlain (274), however, is admirable. A very successful portrait, without any such exaggeration, of a well-marked and well-known physiognomy, is Mr. Ouless's "Dr. Burdon Saunderson" (243). Mr. Sargent's exceedingly clever and expressive group of three sisters (709) is a good example in what we venture to think a vicious method; the style verges on "impressionism," the flesh is not like flesh; yet there is no denying that the individual character, manner, and personality generally of the three sitters is very ably conveyed, and the group very well composed and contrasted. Sir John Gilbert's contribution is "The Slain Dragon" (179),—the dragon of the first book of the "Faërie Queene," lying at his length in the landscape: a very good dragon as dragons go; the knight is too rugged and mature-looking a man for Spenser's hero. In the large gallery also is Mr. G. F. Watts's principal picture, "The Death of Cain" (158), one of a series on this subject, we believe; a painting which, like another already mentioned in the Grosvenor Gallery, tends too much towards the mystical school; Cain, a dark brown figure, fallen forward on his knees, seems more like a rock than a man; an angel rushes past him, pointing onward, amid a coruscation of light. It is fine; it is a picture one must look at; but it is rather too much what might be described as a serious *extravaganza*. Another painting near this (to come from the mystic to the realistic), before which every one must pause, is Mr. Fildes's "A Daughter of the Lagoons" (288), a powerful painting of a magnificent dark-eyed brunette in a crimson dress.

Mr. Riviere's principal work, "Rizpah" (268), is one of many examples of the painting of pictures mainly for the sake of depicting animals, and then giving them the title of a subject which ought to overpower all animal interest whatever. The real objects of Mr. Riviere's picture are the lion and lioness and jackals; Rizpah is quite a secondary matter; but so tragic a subject should not be made subservient to animal painting. Mr. Waterhouse's "Magic Circle" (450), an antique sorceress going through incantations, is a success, because the central figure is of real interest and originality, there is something exceedingly uncanny about her; she is a sorceress all over. Mr. Logsdail has a very brilliant and clever work, utterly prosaic, but uncommonly true to nature, "A Venetian al fresco" (1,047), a party of pleasure of "the lower orders" in a boat going along one of the canals; it is superior in force and ability to anything that artist has previously exhibited; the personages are evidently closely studied from life, and stand out in strong relief as so many individual types of Venetian life. A much higher interest belongs to Mr. J. R. Reid's one work, "The Shipwreck," a scene on a quay or "hard" in bad weather, where an old man who has hardly survived the cold and exposure before he was rescued is supported, half dead, by two stalwart fishermen, a crowd of more or less sympathetic bystanders gazing on him. This is one of the best things Mr. Reid has done, and differs marvellously from many a commonplace shipwreck scene that is painted; it conveys the idea of being a real scene as it happened or might have happened. Among the older *habitués* in the Academy, Mr. Frith has made a successful revival of Dr. Johnson, in the painting of the incident of his attending Madame de Boufflers to her coach; the painting is hard, but the figure of Johnson, as described in Boswell's narrative of the incident, with his little wig, too small for him, on the top of his head, his "rusty-brown morning suit," and his shuffling gait and embarrassed politeness, may be taken as a realisation of the personality of the great man which probably comes very near the truth. As for the works of another old Academician, Mr. Herbert, who, as usual, inflicts on us the full tale of eight, they are quite beyond criticism, and must be seen to be appreciated.

Among battle pictures, the one with most point and the most stirring subject is Mr. Gow's "Cromwell at Dunbar" (412), showing the incident when "the Lord General made a halt and sang the 117th Psalm, till our horse could gather for the chase." The painting of a troop of men all singing with their mouths open is a difficulty which has been finely grappled with; Cromwell, at the head of the troop, is rather a weak figure, but there is an old Ironsides in the foreground, shouting the Psalm with all his lungs, who would have been an awkward person to come across. If we remember right, Dunbar was fought in a gale of wind, which the Royalists had in their faces, and which contributed to their discomfiture: there is no hint of this in the picture. To go from grave to gay: Mr. Collier has sent a large picture representing a group of "Mænads" (757) running through a wood with leopards and snakes in their hands, and looking generally sprightly in their pace and attitudes; but they are obviously only acting the part in a set scene; Mænads who were worth anything, from the point of view of a Mænad, were, we are convinced, a great deal madder than this.

We have endeavoured to indicate the main points of interest in this year's exhibition, which make a respectable total in themselves, but are weighted with a great numerical proportion of uninteresting work. We shall have space for some further notes on painting and sculpture another week.

United Service Club.—Mr. R. St. Aubyn Roumieu has been appointed architect and surveyor to this club.

THE GROSVENOR GALLERY.

THE exhibition this year is by no means of equal interest with many of its predecessors, though it contains some fine ideal works and some very good portraits. The most remarkable work is "Hope" (61), by Mr. G. F. Watts, a very strange and melancholy, though poetic, treatment of the subject. Hope is represented by a blindfolded figure seated on a globe, and trying to string a lyre, towards which she bends her ear to listen what can be drawn from their sounds. A peculiar and indescribable tone of colour pervades the whole, and in composition the figure rising in a pyramidal form from the globe is very fine; there is a grand monumental character about the painting, in spite of its faint and unearthly colouring. Mr. Watts's other contribution, "The Soul's Prism" (10), illustrating, or illustrated by, some lines of Mr. Walter Crane's, might almost have been painted by Blake. It is a half-length female figure of dark brown colour, whose eyes scintillate strangely from the dark face, and who appears surrounded by ray-like flames. Like some others of Mr. Watts's works, it is an attempt to express what it is hardly within the possibilities of painting to express adequately.

Mr. Burne Jones sends three works: of these "Sibylla Delphica" (161) is a decorative painting in his best manner, of a figure heavily draped in terra-cotta-toned garments, standing beside a tripod, and holding up some leaves on which she gazes. As a work to give pleasure to the eye it may rank high, even among its author's works; the colouring is beautiful, and the drapery very finely treated. "Flamma Vestalis" (1) is a less ideal picture, a three-quarter length of a beautiful chaste-looking female figure, seen in profile, the face and hands only visible; as an expression of the idea conveyed in the title, it is very beautiful in conception. His third and largest work, "The Morning of the Resurrection" (96), is a total failure in conception, to our thinking: it may please pious children and child-like souls.

The most remarkable works after these are the portraits. Mr. Tadema sends a very fine one, "a portrait" (67), not at all recognisable at first sight as his work. It is a life-size three-quarter length of a lady in a brilliant green dress, standing in a rather dark staircase apartment, from the upper portion of which a gleam of light only is seen through the top of an archway. The face and hands are painted with the clearness, firmness, and delicacy of finish which marks all the artist's work, whether on a small or a large scale. In this respect it may be instructively compared with Mr. Orchardson's large painting, "Master Baby" (31), which may also probably be regarded as a patient. Here a merry child is lying on its back on a cane-backed settee, laughing at its mother who bends over it. Mr. Orchardson's peculiar tones and texture in the painting of flesh, though one has to get used to and allow for them, do not mar the intellectual interest of the paintings on his usual scale; but here, when we come to life-size figures, the effect is certainly unhappy, and the face of the mother is quite unlike any healthy flesh-tones or texture, it looks flabby and not clean. The baby's laugh is well rendered. Mr. Collier's portraits of "Ria and Frida, daughters of Col. Kennard" (53) is an admirable portrait of children, forcible as a pictorial effect also; white frocks "carried off" (as the old school of critics used to say) by a profusion of white flowers in one corner of the picture; the faces are full of healthy glow, and most delicately painted, that of the younger child especially. The same artist's portrait of Mr. Henry Irving (41) is a great success. His "Miss Nettie Huxley" (198) we hardly like so much.

There are, as usual, a considerable number of portraits by Mr. W. B. Richmond, all of them delicate and harmonious schemes of colour; all conveying the impression that the production of such effects, rather than the portraying of the real character and personality of the sitter, has been the primary aim; unless we must take another alternative, and conclude that Mr. Richmond's sitters have mostly been people devoid of any marked character or expression. The portrait of Miss Burne Jones, seated in a landscape, is the most pleasing of these portraits from a pictorial point of view, in which respect they are indeed all pleasing in their way, but are more or less weak in the matter of character. A small portrait,—a cabinet picture,—of "Mrs. Henschel" (84), by Professor Grosse, should be looked at. In the east gallery we have, in the way of portraits, Mr. J. T. Shannon's "Miss Annie A. Beebe" (159); one of the attempts which have been made, since Mr. Herkomer's brilliant experiment in last year's Academy, to paint white draped portraits on a white background, and not an unsuccessful one; and Mr. Richmond's "Mrs. Warren de la Rue" (163), which, by the way, forms an exception to what we said a few lines back, for it is a brilliant and powerful portrait, with a good deal of character. Mr. Stuart Wortley, in the "Rector's Daughter,—a portrait" (165) has not quite equalled his great success in portraiture (we forget the title) in a previous Grosvenor Exhibition; but this one, a quarter length, has character, and a certain originality in colour, besides good flesh-painting.

Among ideal figure subjects not yet alluded to, is a "Hermes" (89) by Mr. W. B. Richmond, a brown figure standing between the columns of an Ionic temple, leaning one hand against a column while he fits to one of his feet a rather-too-realistic winged sandal. The figure is a fine one, but hardly reaches the ideal character which should belong to such a subject. Mr. Calderon's "Ænone" (74) is hardly perhaps equal to the Tennysonian figure, "Forlorn of Paris," which it is intended to illustrate; but it is a very graceful and expressive figure, seated, nearly nude, on a bank, and gazing wistfully before her; the flesh is very delicately painted, and the attitude and lines of the figure most graceful,—perhaps too much so for the true expression of Ænone's sorrow. In a very different way a picture by Mr. J. D. Batten should be mentioned, "Life's Recompense" (145), an artisan leaning over the back of the chair in which sits his wife with their infant; the painting is life-size, and might have told all its story more effectively on a smaller scale and with less expenditure of canvas, but there is real feeling in it, and the group is finely composed, and has that unity of expression which makes a picture a composition and not a mere assemblage of figures. Of Mr. Strudwick's archæological productions, ancient styles made over again, we have never been enamoured; they are among the clever affectations which have always found a place in the Grosvenor Gallery. There is more point and purpose in Mr. Walter Crane's small and brilliantly-coloured work, "Venice, Florence, Rome" (16); a collection of personages characteristic of the three great Renaissance cities, arranged under three arches of an arcade. Among the Venetian group is seen Titian, stately in his long robes, and Paris Bordone's well-known blond lady; Florence is typified by Cimabüé, stooping over Giotto, who kneels on the pavement sketching, and Dante; Rome by Michelangelo, Raffaelle, and Julius II. Other characteristic figures make up the groups, at the back of which appear, in their respective places, the St. Mark's column, the tower of the Palazzo Vecchio, and St. Peter's. Miss Kate Gardiner Hastings gives us Elsie weaving shirts of nettles to destroy the spell which had changed her brothers into swans, according to Hans Andersen's tale (147); pretty enough, but Elsie seems to take to the nettles with great equanimity, and there is not a sign in her action or expression that she is handling anything so uncomfortable. Miss Pickering's "The Dawn" (184) is an eccentric but rather powerful work representing the dawn by three crimson-robed angels blowing trumpets, the figures of Day and Night beneath, the former wreathed in flowers, the latter departing, as she always does in such paintings, under the protection of a heavy, dark-hued mantle. The three crimson angels, however, are a new idea, and produce a rather striking effect. Mr. R. Barrett Browning has availed himself of a supposed incident in the early days of Joan of Arc (179), to paint a nude figure in a landscape; the figure, with her back to the spectator, falls in so far with the subject that it represents that kind of nervous and well-strung body which one might imagine the soul of Joan of Arc to have inhabited. There is another and more orthodox Joan of Arc picture by Mr. Harold Rathbone, representing the heroine kneeling, in armour, to receive the sacrament; the face is a noble and expressive one.

The finest landscape at the Grosvenor is Mr. J. W. North's painting (7), with a couplet from Spenser as a title. This wonderfully delicate harmony of greens and warm browns, a red bank of earth with a mass of foliage over it and a grass foreground, is an admirable example of that peculiar phase of nature which Mr. North has made his own, or, rather, which he has elaborated into a system in which, beautiful as the results are, there is, perhaps, more of art than nature. The effort to harmonise the sheep in the foreground, for instance, in the present case, leads to painting them of a dull nondescript colour nearly blending with the landscape, as sheep certainly do not blend in nature. Mr. Keeley Halswell's "Scaur na Gillean, Isle of Skye" (35), is a rather middling picture of a magnificent scene; his other landscape, "The Island of Loch Maree" (228) is a fine example of his special and rather restricted powers. Mr. Hamilton Macallum's "A Kiss from the Sea" (81) is a good example of his peculiar and very effective manner of representing the reflection of light on rippled sea water. "In a Cider Country" (122), by Mr. Alfred Parsons, is worth study for its strongly-marked local colour and character; whether the "local colour" of the grass is not too pronounced a green may be questioned. "Sunset after Storm" (142), by Mr. Henry Moore, has a grand rolling mass of clouds warmed by sunset light; there is a wild stormy feeling about the whole scene, but it is not one of the artist's great works. Mr. Hemy's "How the Boat came Home" (149) is a spirited work such as only a painter who has been constantly among boats and by the sea could have painted; the boat, preparing to beach in rough weather, is on the curl of a breaking wave, her bow projecting in the air in front of the wave; you can anticipate with what a thud she will come down on the beach next moment, and what a kick-up her stern will get from the breaker as she does so. Another work by the same painter, "Falmouth Natives" (192) consists chiefly of the stern of an oyster craft swinging up and down on the green water. It is pleasant to look at scenes like these painted by an artist who is really at home in what he paints, and whose pictures smell of the sea and of fishing craft.

Among other works, Mr. Nettleship has a very good lion picture (185); Mr. Spencer Stanhope has a large stained-glass kind of picture, "Why Seek ye the Living among the Dead?" (189), which like Mr. Burne Jones's "Resurrection," will do very well for grown-up children; Mr. J. W. Waterhouse exhibits "A Flower Market" (109), a pleasant bit of cheerful realism amid an exhibition too much pervaded by affectations; Mr. Leslie has "The Garland" (50), woven by some young girls on a sunny lawn, who look rather as if they knew they ought to be at the Royal Academy and not at the Grosvenor; and Mr. John O'Connor has "St. Peter's from the Vatican Gardens" (24), in which the architecture is so forcibly painted and the foreground so deficient in force that the building seems to come close up to the spectator, and consequently only looks half its real size from want of aërial perspective, nor would any one at first glance take it for a building on the scale of St. Peter's,—a caution to architectural painters.

Among the sculpture exhibited is Mr. Maclean's life-size group "Spring," a very clever translation into marble of two figures from one of Mr. Tadema's paintings, of which we have before spoken in praise when it was in a small exhibition of Mr. Maclean's works in Piccadilly. This is the principal work in sculpture. Among the others we may mention a very pretty bronze statuette by Mr. Gilbert, a study of a head by Mr. Mullins, and a good portrait bust of the Abbé Lizst, by Mr. Boehm.

A Social Reform Conference. — The Fabian Society has made arrangements for a Conference, which will be held at the South Place Institute, Finsbury, London, on three consecutive evenings in June next, in order to afford an opportunity for those interested in the labour question to discuss the present economic system, and the better utilisation of national wealth for the benefit of the community; and the following is the proposed order of discussion:—(1) "The Utilisation of Land" (Wednesday, June 9th); (2) "The Utilisation of Capital" (Thursday, June 10); (3) "The Democratic Policy" (Friday, June 11th). On each evening the Conference will sit from 5·30 till 7·30, and, after an adjournment for half an hour, will continue the sitting at 8 o'clock.

THE EDINBURGH EXHIBITION.

IN 1859 an attempt was made to get up an International Exhibition in Edinburgh. Designs for a Crystal Palace were prepared by the late Mr. David Rhind, architect, and a site selected on the ground which then formed the Experimental Garden, now the pinerium, attached to the Royal Botanic Gardens. This attempt having proved futile, a suggestion was made, in the pages of the *Edinburgh Guardian*, that the buildings for the National Gallery and Royal Scottish Academy, then recently completed, might be utilised for the purposes of an art-treasures exhibition, on a limited scale. This suggestion was acted upon, and in 1861 an exhibition was opened in the buildings on the mound, which was mostly confined to the display of furniture, textile fabrics, and ceramic ware. This exhibition, although on a small scale, was most interesting, showing as it did that the Great Exhibition of 1851 had even then had an influence upon the art manufactures of the country. It did not, however, prove a success financially.

The Fisheries Exhibition of 1883, held in the Fruit and Vegetable Market, and the more ambitious Forestry Exhibition, of 1884, held in specially-designed buildings erected in the grounds of Donaldson's Hospital, both proved successful, and led to the suggestion that an International Exhibition, upon an extensive scale, might reasonably be ventured upon. A small committee was formed and proceeded to action in the most energetic manner. According to Dean of Guild Gowans, chairman of the Executive Committee, they met with little encouragement at first, but in course of time the guarantee fund, which was originally fixed at 25,000*l.*, was subscribed, and it went on increasing till it now stands at 36,000*l.* Plans were advertised for, and those submitted by Messrs. Burnet & Lindsay, of Glasgow, were adopted. The building is now completed, and the Dean pronounces it to be perfect as regards the requirements, and the cost, 30,000*l.*, to be small. The space originally intended to be set apart for exhibits was 78,000 square feet, but the applications by exhibitors were in excess of what was expected, and the space has been extended to 112,000 square feet.

Part of the buildings is intended to be permanent, and is constructed of concrete, iron, and glass. The plan is based on the simplest lines, forming a central avenue, 970 ft. in length, with courts on each hand, 135 ft. each. The permanent portion has a central court at right angles to the temporary buildings, with aisles and transepts, the latter being in continuation of the central avenue, and the aisles are appropriated as art galleries. The principal entrance is in the west façade, under a deeply-recessed semicircular pediment, flanked by square towers, from between which appears a dome, with a lantern, surmounted by a winged figure, gilt, and the angles of the great court are surmounted by small domes. This façade is approached by a flight of steps, 120 ft. wide, composed of long blocks of Stewart's granolithic material, and the main doorway, a satisfactory architectural design, richly moulded and decorated, is formed of the same material, as are also two detached Corinthian pillars, surmounted by vases, on each side. This material is close in texture, and has stood the test of time most satisfactorily. The present example is of a rich red colour, but we have seen specimens of it of a glittering white and a sober grey. It can be formed in blocks of considerable thickness and of greater length than stone can readily be procured, and the mouldings are sharp and clean. This material bids fair to be of much use to the builder, especially where long lengths are required without joints, as in staircases, &c.

Taking a hint from South Kensington, an "Old Edinburgh" has been formed at the east end of the central avenue. Its design was entrusted to Mr. Sydney Mitchell, who has arranged some of the ancient edifices which have disappeared from the old town, in a remarkably picturesque and effective manner. Entering by the Netherport, we find ourselves in an irregular oblong court, with quaint gabled and turreted houses having outside stairs, projecting windows, and moulded doorways, surmounted by armorial bearings, texts, &c. This portion of the buildings cost about 4,000*l.*, but the rents received for the shops therein reach to within 700*l.* of that amount.

One of the most interesting adjuncts of the Exhibition is an original conception of Mr. Gowans', to whose unwearied exertions and enthusiasm the existence of the Exhibition is in great part due. He has designed two pillars, which are placed at the north-western entrance of the Meadows where the Exhibition buildings stand. They are constructed of freestone,—red, white, and yellow,—procured from all parts of Scotland and the north of England, contributed by the quarry-masters. The workmanship is the gratuitous contribution of operative masons, and shows the various modes of tooling in use. The names of the quarries from which the specimens are procured are carved on them, and they will thus form a useful source of reference in time coming of the durability and texture of the materials. The pillars are octagonal in form, 33 ft. in height, having moulded panels, and are decorated with the armorial bearings of the principal Scottish cities, and surmounted by unicorns supporting shields and bannerets.

The exhibition was opened on Thursday by Prince Albert Victor of Wales.

THE ST. PAUL'S RAILWAY STATION:

LONDON, CHATHAM, AND DOVER RAILWAY.

ON Monday next the new City Station of the London, Chatham, and Dover Railway, in Queen Victoria-street, immediately opposite the *Times* office, will be opened for traffic. The station, which extends for some distance over the river on the new five-arched railway-bridge which has been built immediately to the eastward of the existing lattice-girder bridge, has been named the "St. Paul's Station," and its opening seems likely to do much to alleviate the lot of the long-suffering residents south of the Thames who have been obliged to use the Ludgate Hill Station. The new station, by the bye, is almost immediately contiguous to the south end of Ludgate Hill Station, the two stations being in communication with each other by the girder-bridge which spans Queen Victoria-street. Seeing that, just to the north of Ludgate Hill Station,—literally within a stone's throw of it, in fact,—there is the Holborn Viaduct Terminus of the same railway, and beneath this terminus the low-level Snow Hill Station for the through traffic to Moorgate-street, King's Cross, and beyond, the London, Chatham, and Dover Railway Company have practically four stations all adjoining each other. It was pointed out in our columns some years ago that this company lost a great opportunity in not placing its city terminus on the eastern side of Farringdon-street, where adequate room might at one time have been obtained for a large high-level station. The local or suburban passengers could have entered the station from the north side of Ludgate-hill or from Farringdon-street, reaching the platforms by steps as at the present Ludgate-hill Station, while cabs and carriages could have entered the station from Holborn Viaduct, as in the present Holborn Viaduct terminus. Had the latter been four or five times its present size, it would have afforded all necessary accommodation for the City traffic of the Company, and while the low-level station at Snow-hill would still have been necessary, two of the four stations which the Company will now possess in this part of the City might have been dispensed with, greatly conducing to simplicity and economy in working the traffic, and saving a great outlay in station buildings, signalling arrangements, &c. But, recognising the fact that it is of no use to cry over spilt milk, the Company has perhaps, by the present important supplement to its station accommodation, done its best to meet the ever-increasing requirements of its traffic, and the addition has been well planned.

The works have been in progress since the spring of 1883, and have thus occupied about three years to complete. The new bridge crosses the river on five arches, three of which are of 185 feet span each, and two of 175 ft. span each. It carries seven lines of rails over the river, and with the four lines over the lattice girder bridge the company are in possession of eleven lines of rails between the Middlesex and Surrey sides of the Thames. The arches and superstructure of the bridge are of wrought-iron, the arch principals springing from massive granite piers. Between 6,000 and 7,000 tons of iron have been used in the erection of the structure. The bridge was originally designed to carry four lines of rails only, and its estimated cost, according ro these dimensions, was about 300,000*l.*, but it having subsequently been determined to widen it to a capacity of seven lines, the outlay on the structure will approach 500,000*l.* A special feature in the construction of the bridge consists in its commencing to widen out on approaching the Middlesex shore, at the third pier from the Surrey shore, and thus on reaching the Middlesex side a considerable extended width is obtained, which is devoted to station purposes, as before mentioned. The new booking and other offices of the station constitute a prominent building, faced with red brick and Corsehill stone, and having a frontage of 140 ft. to Queen Victoria-street, there being square towers at each angle. On the street level in Queen Victoria-street is a large central hall, containing the booking-offices, together with refreshment-rooms and waiting-rooms. The station and booking-offices are admirably planned and lighted. The screen of the ticket-office (which has seven windows), and the doors and other woodwork, are well and solidly constructed in oak, and arrangements are made for keeping the streams of passengers leaving and entering the station distinct. From the central booking-hall three spacious staircases, 12 ft. in width, and fitted with Hawksley's patent treads, lead up to the station area and railway level above, a large landing being provided midway. That portion of the station area immediately adjoining the booking-offices, and extending to the margin of the river, has, to a large extent, been constructed on arches (available for cellarage purposes), and is covered in by an angular iron and glass roof, rising to a height of upwards of 40 ft. above the railway level; the platforms, which are four in number, being nearly 400 ft. in length, and extending, as already stated, beyond the Middlesex shore arch of the bridge, the greater part of the over-river portion of the station being covered in by a roof of patent zinc and glass. It should be added that the booking-offices are immediately over the Blackfriars Station of the Metropolitan District Company, and provision is made for communication between the two stations. The works were designed jointly by Mr. J. Wolfe Barry, Mr. H. M. Brunel, and Mr. W. Mills, as engineers, and have been carried out by Messrs. Lucas & Aird; the ironwork of bridge and station being made and supplied by the Thames Ironworks and Shipbuilding Company, Millwall. The three terminal "bays" or "train-docks" of the station are provided with Langley's ingenious hydraulic stop-buffers, made by Messrs. Ransomes & Rapier, for the prevention of accidents in case the trains run in too sharply towards the "dead-ends." Mr. Crutwell has been the resident engineer; and to Mr. Turner, the courteous representative of the contractors, we are indebted for his kindness in showing us over the works. Messrs. Saxby & Farmer have supplied the signals; whilst the lighting of the station and works in connexion has been entrusted to Mr. W. C. Cannon, of London-road, Southwark.

The Gravesend extension line of this company, which will also be opened on Monday, places the Chatham and Dover Company in competition with the South-Eastern Company for the traffic to Gravesend. The new line commences by leaving the main line at a point between the Farningham-road and Fawkham stations, and thence, proceeding in a north-easterly direction, it arrives at Gravesend immediately on the banks of the Thames, where a pier, which has been erected, will place the railway-trains in communication with the large steamers at Tilbury.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

ELECTION OF PRESIDENT AND COUNCIL.

AT the fifty-second annual general meeting of members, held on Monday evening last, the Council for the ensuing year of office were elected, viz.:—

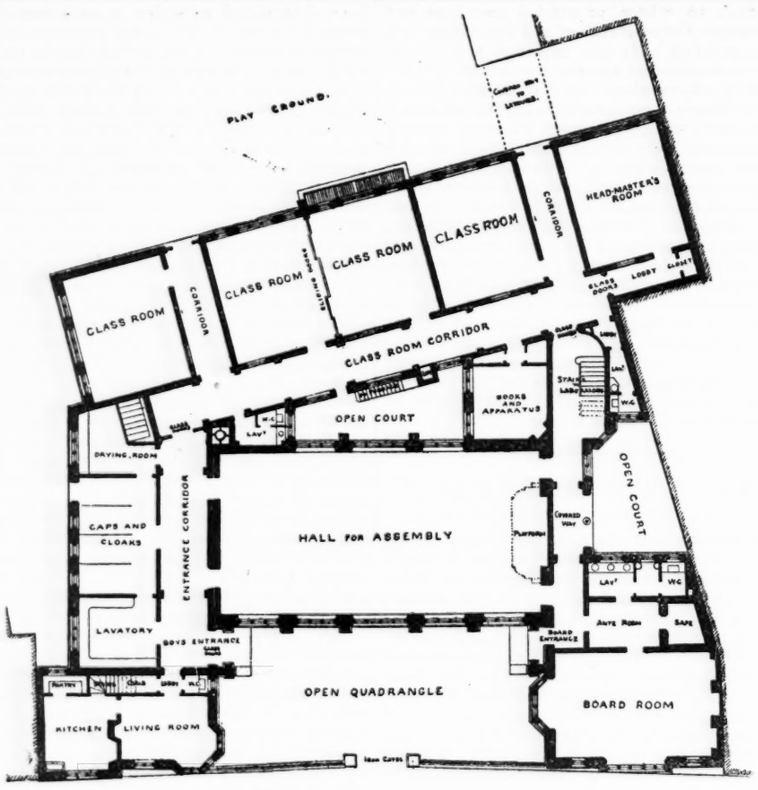
President.—Mr. Edward I'Anson, F.G.S.

Vice-Presidents.—Messrs. Alfred Waterhouse, R.A., Thomas Worthington (Manchester), and Arthur William Blomfield, M.A., F.S.A.

Council.—Messrs. George Aitchison, A.R.A., James Brooks, Arthur Cates, Charles Roberts Chorley (Leeds), Henry Currey, Robert William Edis, F.S.A., William Emerson, William Milner Fawcett, M.A., F.S.A. (Cambridge), Charles Fowler, Edward Augustus Gruning, Octavius Hansard, Charles Richard Pink, John Slater, B.A., Thomas Roger Smith, and Aston Webb.

Honorary Secretary.—John Macvicar Anderson.

Secretary.—William Henry White.



PLAN OF THE GROUND FLOOR

Plan of Cheltenham Grammar School.

Illustrations.

THE CHURCH OF ST. BARTHOLOMEW-THE-GREAT.

FOR a description of Mr. Aston Webb's proposed restoration of the interesting old Church of St. Bartholomew-the-Great, West Smithfield, see the article on p. 663. We give an interior view, with transverse and longitudinal sections.

THE ATKINS MONUMENTS, CLAPHAM.

IN the *Builder* for January 2nd last we gave an account of the circumstances attending the remarkable discovery, just then made, of sculptured figures beneath the old parish church of St. Paul, Clapham,—a discovery due to the insight and perseverance of Mr. J. W. Grover, F.S.A. The figures, five in number, are those of some members of the Atkins family. We illustrate three of them. The recumbent male figure is that of Sir Richard Atkins, Lord of the Manor of Clapham, who died in 1689. The other recumbent figure is that of Lady Rebecca Atkins, wife of Sir Richard. The seated figure, absurdly clad in Roman costume and with full-bottomed wig, is that of their son, Henry, who died in 1677, aged 24. The other figures discovered were those of two daughters, Rebecca, who died in 1661, in her ninth year, and Annabella, who died in 1670, in her nineteenth year. The figures are all in exceedingly good preservation,—no doubt because their existence had been so utterly lost sight of,—and, as we mentioned a few weeks ago, Mr. Grover, assisted by some friends, is collecting funds for placing the figures in a suitable and protected position in the church. Many who have seen the monuments incline to the belief that they are the work of a foreign sculptor or sculptors.

PORCH AT EAST SHEEN, SURREY.

THE porch, designed by Mr. T. Collcutt, forms part of an addition to a house at East Sheen, and is constructed in terra-cotta, the roof being covered with Hartshill tiles; the inside is lined with red Staffordshire tiles.

The alterations were carried out by Messrs. Peirce & Lansdown; the terra cotta was supplied by Mr. George Jennings, from his Parkstone potteries, and is of an excellent colour. The drawing is in the Royal Academy exhibition.

CHELTENHAM GRAMMAR SCHOOL.

THE accompanying plan shows the arrangement of the ground-floor. The assembly-hall is set back from the line of the street, and forms one side of an open quadrangle, 55 ft. by 25 ft., having on the right the board-room and entrance for the governors, and on the left the caretaker's residence and entrance for the scholars. The class-rooms are placed in the rear, and have a north-west aspect, facing directly down the playground. The whole of the accommodation, with the exception of the chemical laboratory and lecture-room, which are on the first floor, is on one level.

The cloak-room and lavatory, and also a room for drying coats in wet weather, are provided adjoining the entrance-corridor, and there is a way from the cloak-room direct to the playground. The old buildings on each side of the playground can be retained, and are proposed to be utilised as recreation-rooms or workshops for the boys. The latrines are detached from the schools, and are to be approached by a covered way.

The schools were originally founded by Richard Pate, in the reign of Queen Elizabeth; the style prevalent at this period has, therefore, been adopted.

The exterior is proposed to be faced with Bath or Doulting stone, and the roofs covered with Broseley tiles. The assembly-hall has an open-timbered roof, with a lofty bell-turret (utilised also for ventilating the room) rising from the centre. The walls are lined with wainscoting below the windows, and there is a gallery at the end opposite the platform.

The building is proposed to be warmed by an apparatus in the basement, and the chimney in connexion with this is constructed with a hollow space all round, into which the ventilating flues are carried.

The estimated cost of the buildings, exclusive of the school fittings, is 5,560*l*.

The architect is Mr. Henry Hall, whose design was selected in competition.

WEST WINDOW, TICKHILL CHURCH, YORKSHIRE.

THE west window in Tickhill Church has recently been filled with stained glass, which has been designed and executed by, Messrs. Powell Brothers, of Leeds.

The ten chief openings contain the following subjects from the Book of Genesis:—The Fall, Abel's Acceptable Offering. Rainbow Covenant Abraham meeting Melchizedek, the Destruction of Sodom, Abraham's Sacrifice, the Meeting of Isaac and Rebekah, Jacob obtaining the Blessing, Joseph sold to the Ishmaelites, and the Death of Joseph.

The tracery lights contain the Days of Creation, presented to the church by the Misses Alderson, of Tickhill.

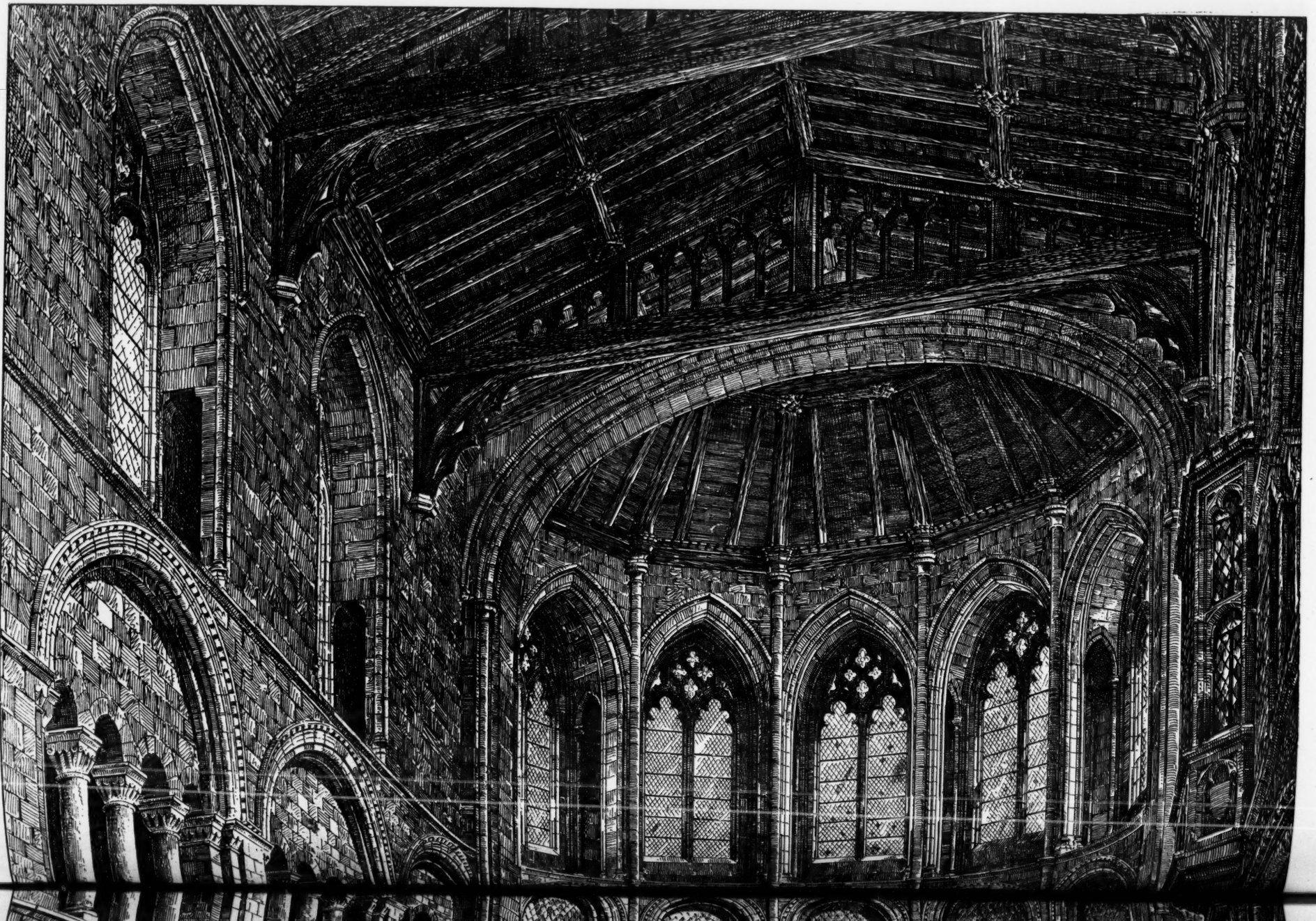
The church was partially restored some two years since under the superintendence of Mr. J. D. Webster, of Sheffield.

ARCHITECTURAL SOCIETIES.

Edinburgh Architectural Association.—The fortnightly meeting of this Association was held on the 29th of April, in the Professional Hall, George-street, the President, Mr. G. Washington Browne, in the chair. After the usual preliminary business, a paper on "Gothic Ornament" was read by Mr. James Gordon, architect. The author traced the characteristics of the Romanesque and Byzantine expressions of art in ornament, and showed their combined influence in the rise and development of the Gothic style in the end of the twelfth century. Celtic art, he said, attained to a high degree of perfection in Ireland as early as the sixth century, and was carried thence by the early Christian missionaries to Britain and the Continent, where it influenced very largely the subsequent phases of ornamental art. The Norman period, which preceded the advent of Gothic, was an age of great artistic vigour, when every form of decorative art suddenly assumed a degree of perfection unapproached for a thousand years. The various changes in Gothic ornament, corresponding to the architectural styles, were described,—those exhibited in the arts of sculptured ornament, stained glass, ornamental metal-work, and MS. illuminations receiving chief consideration. Conventional treatment in foliage and figure representations marked the earliest and best periods of Gothic ornamental art. Towards the end of the fourteenth century, and even earlier in Continental Gothic, naturalistic foliage which did not suit the material used, and which had little in sympathy with the purpose, began to assume the ascendancy over the conventional. This tendency soon led to the decadence of Gothic ornament. The paper was illustrated by numerous photographs, cartoons, and drawings, several of the drawings being the work of that talented draughtsman, the late J. G. Laing. After the customary discussion, a hearty vote of thanks, proposed by Professor Baldwin Brown, and seconded by Mr. Bonnar, was given to the lecturer.

Northern Architectural Association.—The first of a series of out-door meetings of the members of this Association took place on Saturday last, when they visited the New Town-hall and Municipal Buildings at Middlesbrough, which have been in course of erection for the past three years, and will occupy at least two years longer to complete. The members were met by their President, Mr. G. Gordon Hoskins, F.R.I.B.A., the architect of the buildings, who, acting as *cicerone*, conducted them over the works. The existing stage of operations is, perhaps, for members of the profession the most interesting, inasmuch as the greater portion of the vast scheme is laid bare, and all such vital subjects as construction, heating, ventilating, and the sanitary arrangements can be more thoroughly grasped than when in a more advanced stage. We may mention that a description of the building, accompanied by a double-page perspective view, appeared in the *Builder* for January 13, 1883. After a very complete inspection, occupying upwards of two hours, the members accepted the invitation of the President to refreshments at the Corporation Hotel, after which they left by train for Darlington, where they went over the Free Library and the New Hospital, both recently completed works of which Mr. Hoskins was also the architect. The majority of the members ultimately returned to Newcastle.

Newcastle-upon-Tyne.—Messrs. R. & W. Hawthorn Leslie & Co. are now erecting an extensive range of offices, pattern-shops, and stores at their St. Peter's Works, also a new approach to the existing offices from St. Peter's Station, from plans prepared by Mr. Wm. Glover, architect, 16, Market-street, Newcastle.



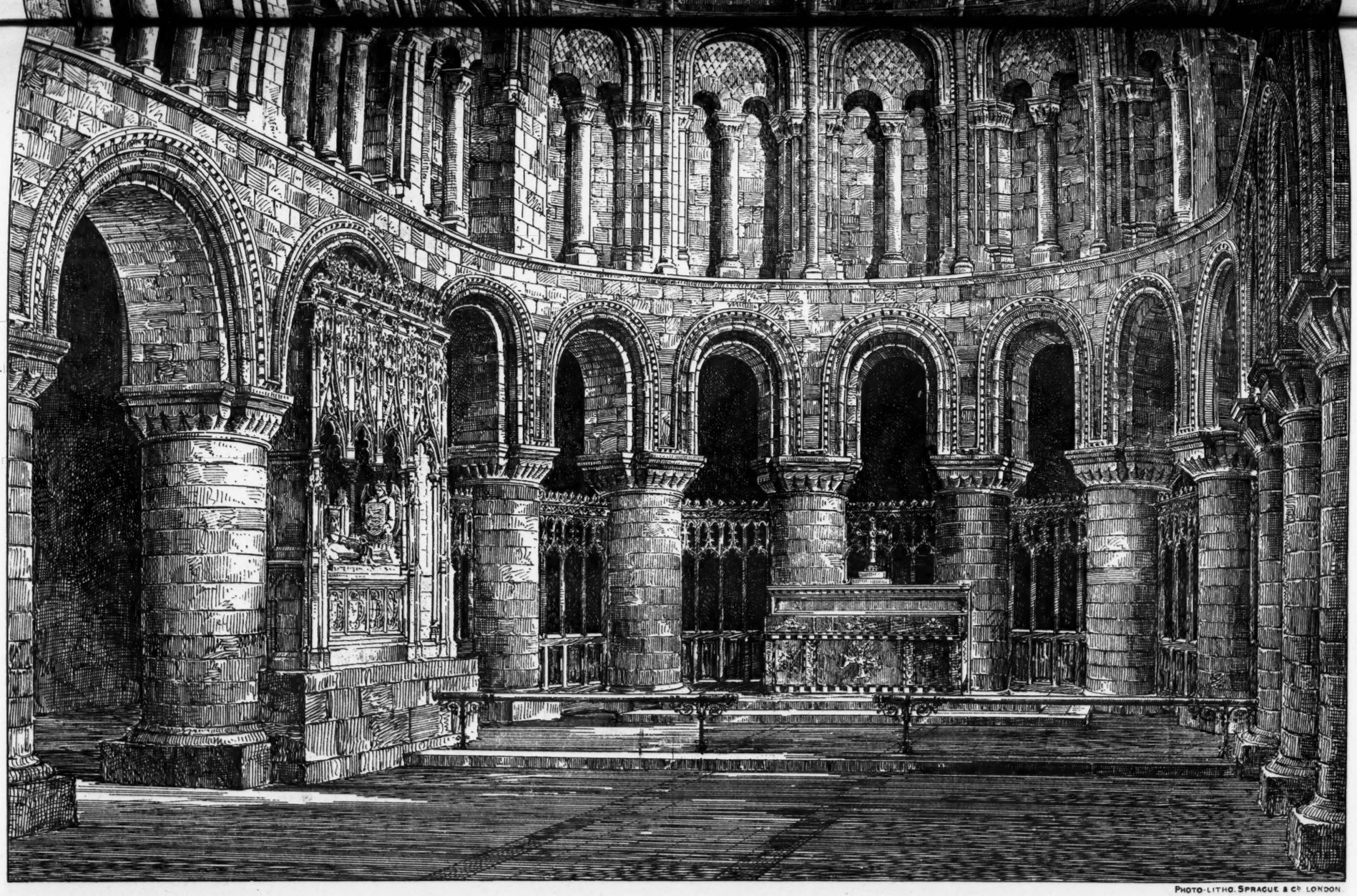


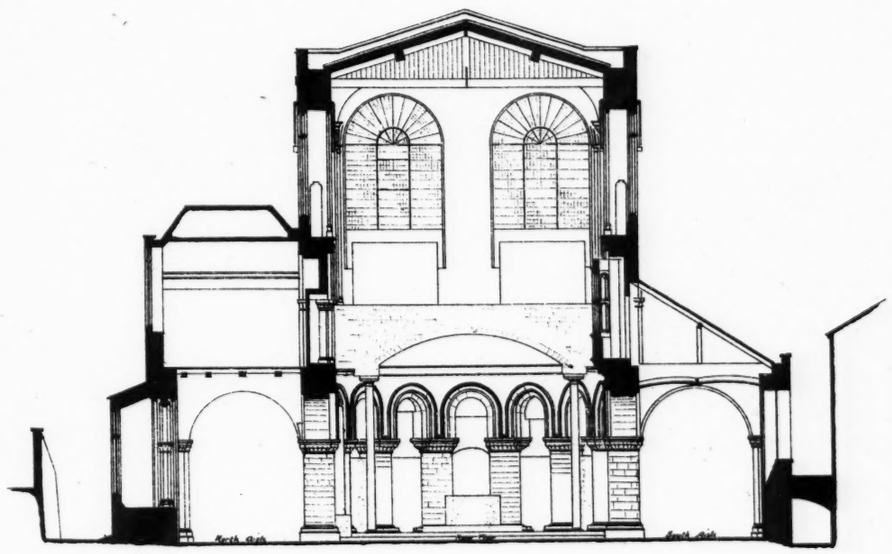
PHOTO-LITHO. SPRAGUE & Cº LONDON

CHURCH OF ST. BARTHOLOMEW THE GREAT, WEST SMITHFIELD,—VIEW SHEWING PROPOSED COMPLETION OF THE EAST END.

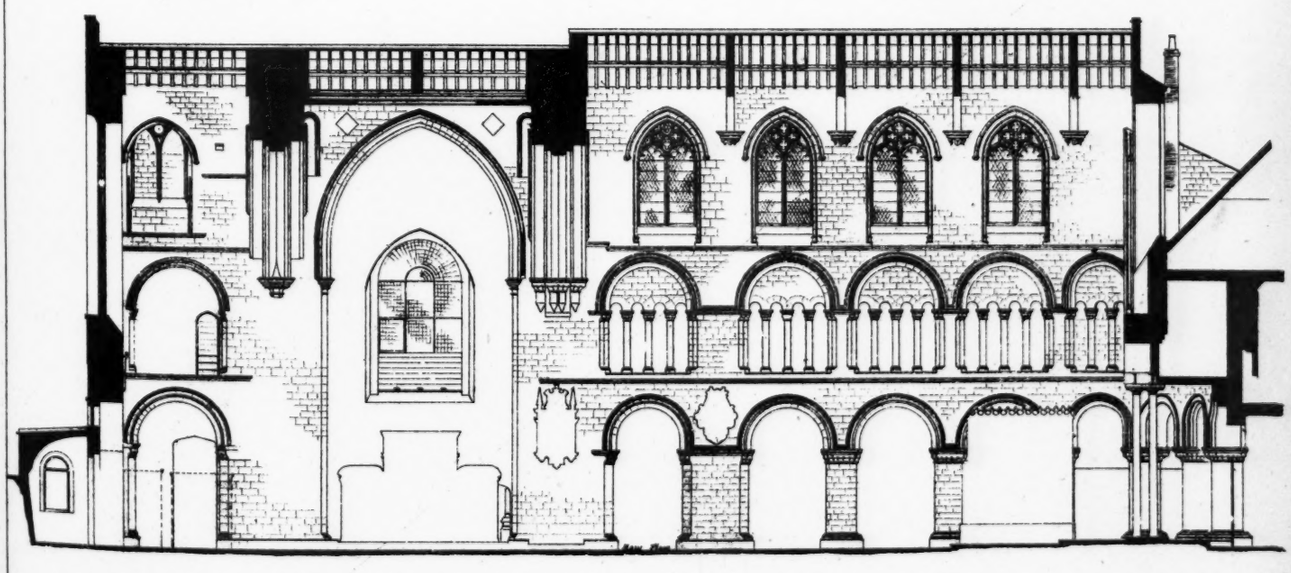
MR. ASTON WEBB. F.R.I.B.A., ARCHITECT.

INK-PHOTO. SPRAGUE & Cº. LONDON.

MONUMENTS LATELY DISCOVERED IN THE CRYPT OF THE OLD PARISH CHURCH, CLAPHAM.



TRANSVERSE · SECTION
LOOKING · EAST.



SECTION · THRO · CHURCH.

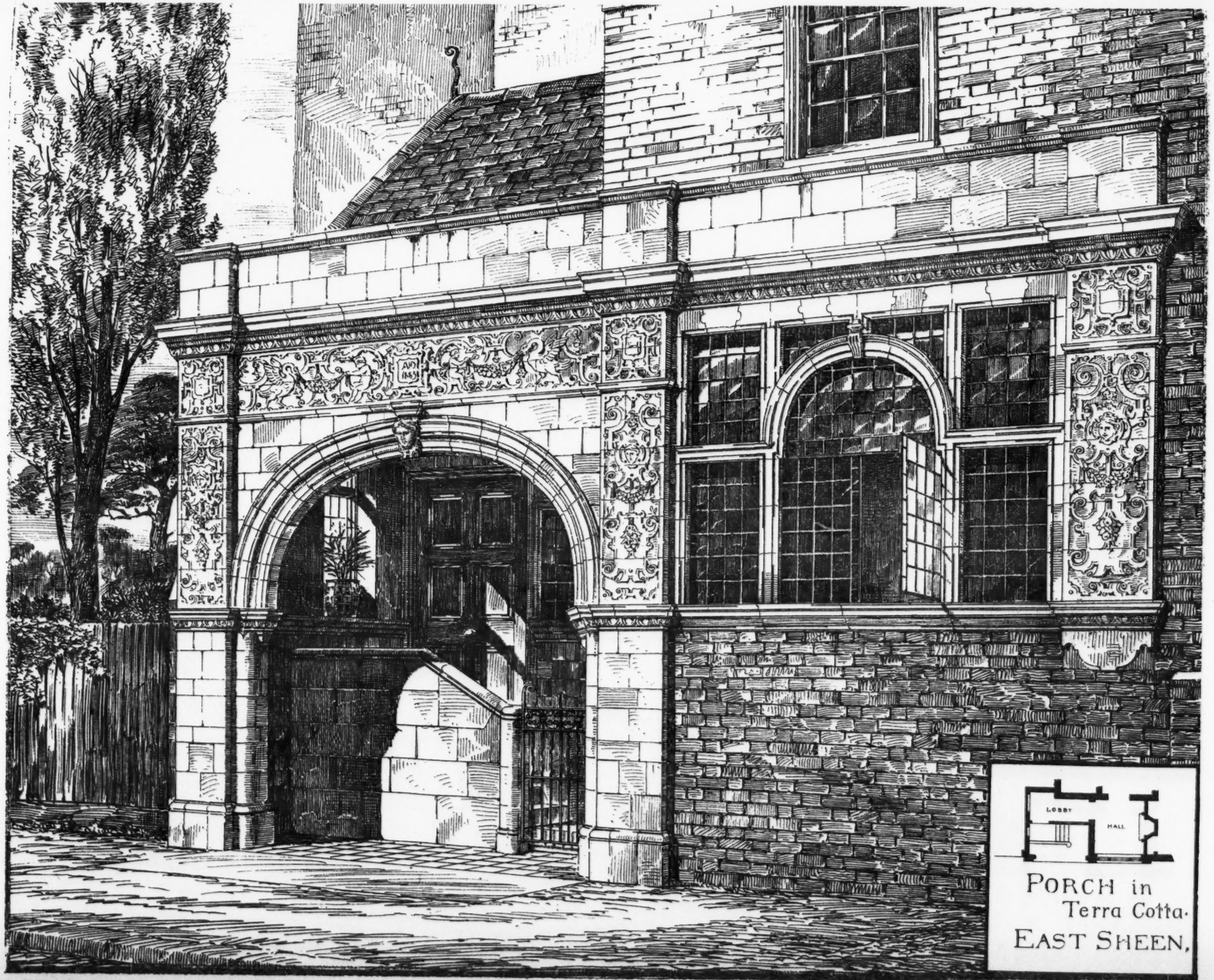
PHOTO-LITHO. SPRAGUE & Co. LONDON

CHURCH OF ST. BARTHOLOMEW THE GREAT, WEST SMITHFIELD.

SECTIONS AS EXISTING, SEPTEMBER, 1885.

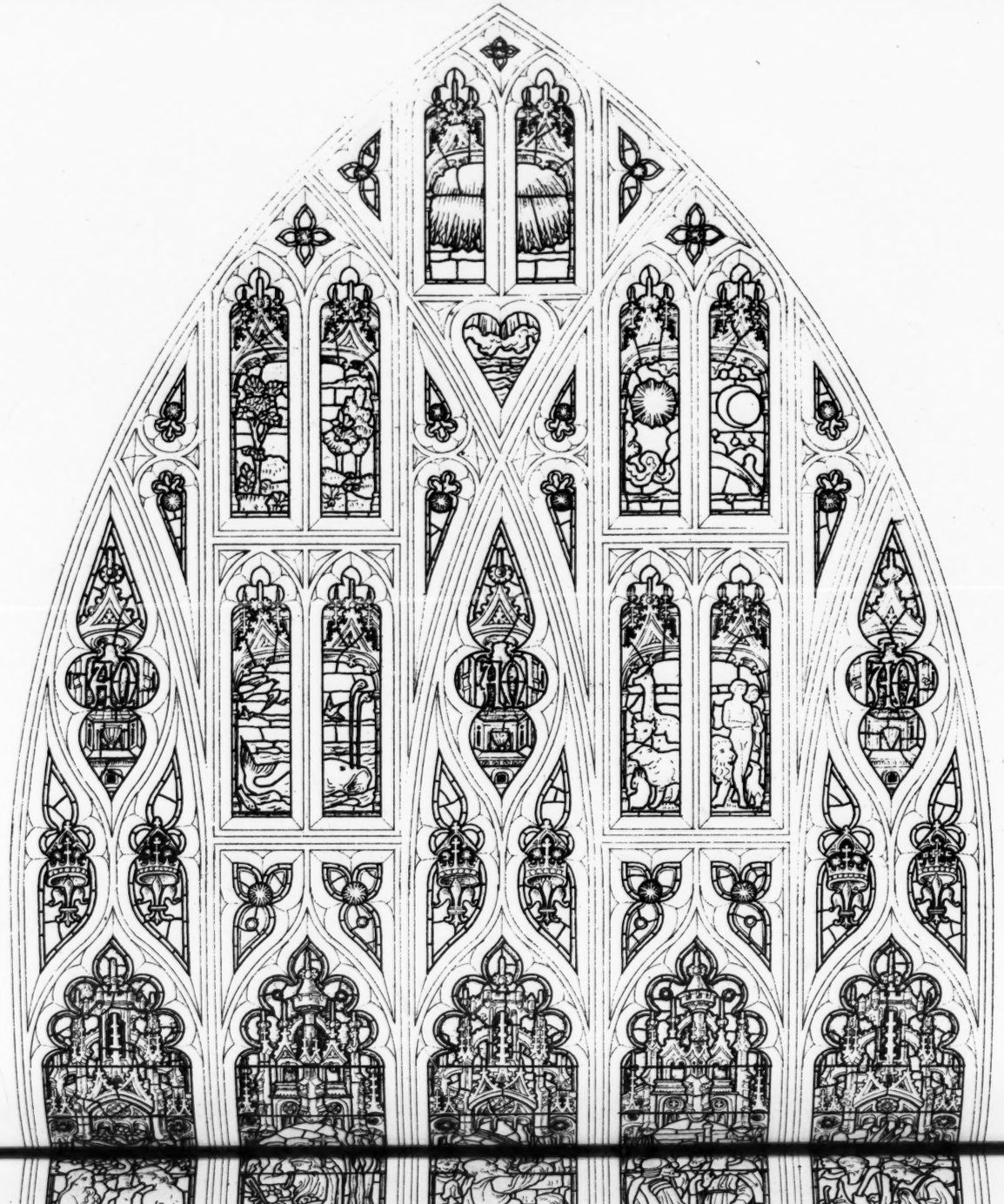
C F.Kell Photo-Lith & Printer 6.Furnival St Holborn,London.E.C.

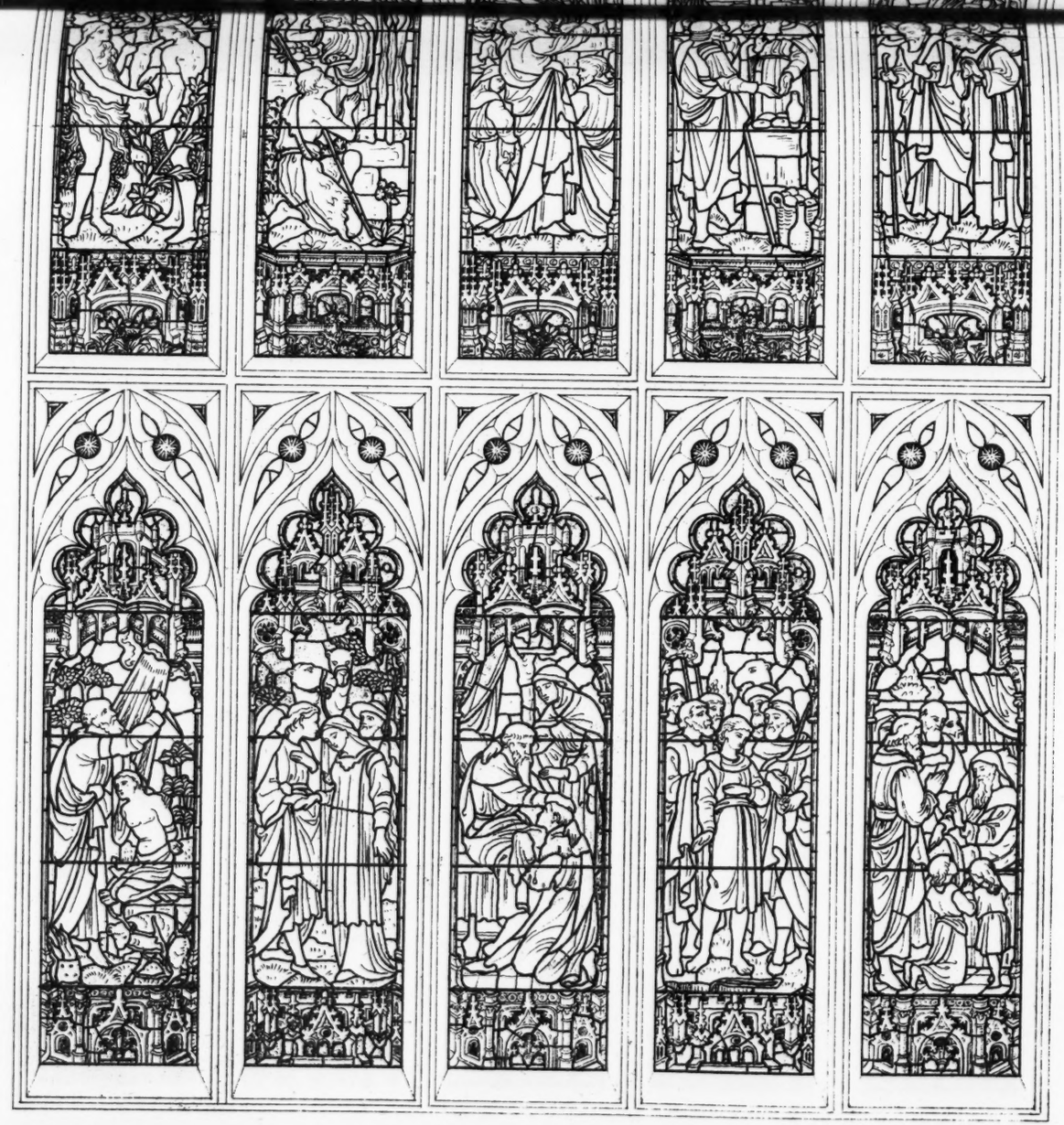
ACCEPTED DESIGN FOR THE CHELTENHAM GRAMMAR SCHOOL. Mr. Henry Hall, F.R.I.B.A., Architect.



C.F.Kell, Photo-Litho. Castle St Holborn, London, E.C.

A PORCH IN TERRA COTTA. MR T. E. COLLCUTT, F.R.I.B.A. ARCHITECT.

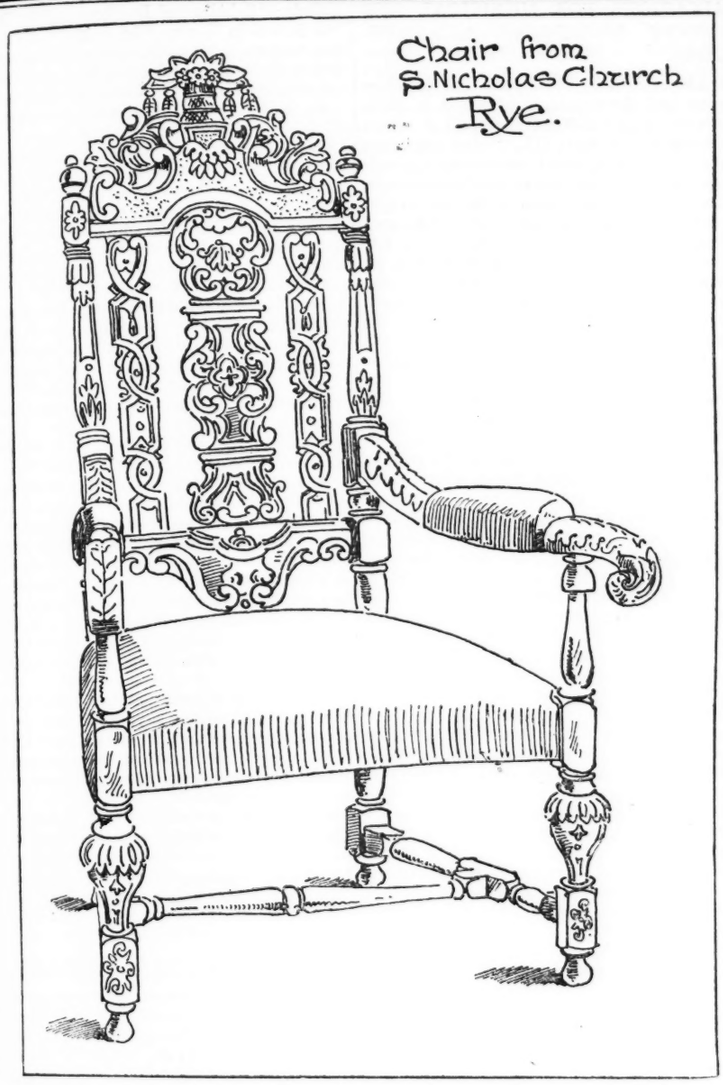




WEST WINDOW, TICKHILL CHURCH, YORKS: EXECUTED IN STAINED GLASS BY MESSRS POWELL BROS LEEDS.

C. F. Kell Photo-Lith & Printer.

8, Furnival St. Holborn. London. E.C.



CHAIR, ST. NICHOLAS CHURCH, RYE.

WITH some of the faults of decorative style pertaining to its date,—the apparently constructive weakness, for instance, of the back rails,—this is an example of a late Renaissance chair worth commemoration for elegance and richness of effect. We can give no information as to its history.

COMPETITIONS.

Hospital for Children, Shadwell.—We are in informed that Messrs. H. Saxon Snell & Son have been requested to advise the Board of Management of the Shadwell Children's Hospital as to the merits and probable cost of four designs selected from those sent in in competition for the proposed new wing to the East London Hospital for Children and Dispensary for Women, Shadwell.

Board Schools, Clyde Bank, Dumbartonshire. In the old Kilpatrick School Board competition, noted last week (p. 660), the designs of Messrs. F. & G. Holme and James S. A. Mercer, joint architects, Liverpool, were placed second out of fourteen competitors.

EXHIBITION OF JAPANESE ART-WORK.

IN connexion with Mr. Ernest Hart's course of lectures on "The Historic Arts of Japan" at the Society of Arts' rooms, there is being exhibited in the library of that institution a collection of old Japanese metal-work, pottery, bronzes, lacquer, "kakemonos," &c., exhibiting the various manners and styles of the several schools of Japanese artists, from the foundation of the first native school in the ninth century.

The objects, with few exceptions, are from the private collection of Mr. Hart, and are arranged in historic sequence. Among the kakemonos, or hanging pictures, we noticed particularly a figure of the Buddha, by Kanaoka (ninth century?), in quiet neutral colours which seem to harmonise with the serene and expressionless countenance of the god. Another, which hangs close by, represents the Buddha surrounded by a heavenly choir playing, singing, and dancing among the clouds; it looks beautiful in the midst of beautiful objects, and in its gold and dark-blue colouring inclines one to wonder whether "the unknown artist of the twelfth century" may not have been Cimabue in a previous phase of existence. On the opposite side of the room may be seen a representation of a Japanese æsthetic exquisite carrying a branch of "the poet's tree" (the plum), and with a beautifully embroidered border of chrysanthemums on his dress. A picture of dogs by Okio, which hangs near, surpasses anything we have hitherto seen in delicacy and tender colouring, and has besides a touch of that humour so characteristic of Japanese art. By the popular modern master, Hokusai, there is a representation of the domestic goddess, Ofuku, casting out the demon of dirt and disorder by throwing beans—the Japanese equivalent for holy water—at him, a kind of "spring cleaning" supposed to be performed in every household upon New Year's day.

Among the swords and sword-guards exhibited, it is curious to notice how little the artists who decorated them thought of sparing their labour, and how they spent it equally upon the basest and the most valuable materials—the hardest iron, and even the steel blades of the weapons, are chased with delicate and beautiful ornament, and the guards and scabbbards are damascened, enamelled, carved, lacquered, and inlaid with almost every material that could be procured—mother-of-pearl, coral, ivory, crystals, and metals, chiefly gold, silver, copper, and alloys. These materials are not, as a rule, used in their crude state, but are carved into flowers and leaves, insects, reptiles, &c., and are stained in delicate tints, with the proper veins and marks drawn upon them. The beautiful early sword-guards of cold hammered iron must also have been wrought with an amount of labour and patience difficult to realise.

We have no space left to speak of the pottery and the bronzes and the works in lac, but we were as much delighted as ever with the delicacy and humour, as well as with the loving patience, the spirited freshness, and the broad sympathies of the old Japanese artists. No work of nature is too great or too small for them, from a mountain to the petal of a flower, from a human being to a tiny insect, everything is studied and drawn, carved and coloured with equal care, accuracy, and feeling.

ARCHITECTURAL ASSOCIATION: ITALIAN EXCURSION.

THE following further notes of this excursion (see p. 637, *ante*) have been forwarded to us:—"We reached Siena on Tuesday, the 27th April, and visited the cathedral, studying the large mosaics in the west façade and the interesting incised outline pictures in the marble pavement. In the fourteenth century a far larger building was commenced, it being the intention to make the present cathedral a transept of the new one, but only a portion of this building was carried out, and the original cathedral was completed as it now is in 1348. The library is celebrated for its frescoes. The baptistery under the choir contains a curious font with a ciborium in the centre. The Opera del Duomo contains some interesting plans of the larger cathedral and cartoons of the pictures on the pavement, and a splendid collection of needle-work, consisting of altar frontals, chapel hangings, &c. The Church of St. Domenico is a striking brick building of the fourteenth century, consisting of a nave and transepts, 70 ft. wide, with open timber roof of king-post construction, with chancel and six chapels at the east end, a striking feature in the church being the small window space required to light it, only four windows being left open in the nave, though the church has the appearance of being well lighted. Under the east end of St. Domenico, which is built on the side of a hill, is the celebrated fountain of Fontebranda. The Church of St. Catherina de Siena contains some good majolica tiles and carved and inlaid stalls. The Palazzo Pubblico, with the adjacent tower and the other interesting buildings in the market-place, make it one of the most picturesque places seen on the excursion. The Loggia of the Casino de' Nobili, with its handsomely-carved benches, and the various large private houses, with their quaint iron brackets, were all carefully studied. The next town visited was Orvieto, which was reached on Tuesday afternoon. The cathedral, as is well known, is similar in style to Siena, though not so large. The west façade contains splendid mosaic pictures, and a marvellous wealth of carved marble. The roof of the nave is now being restored, the present roof, erected in 1826, showing signs of decay. The roof is of king-post construction, and is being reinstated with fir, similar to the roof that is being taken off. Whether it will last more than fifty years is rather doubtful. The span is 62 ft. A great deal of the detail in the cathedral, and the other buildings in the town, shows strong resemblance to our Northern Norman work. There are several churches with interesting fragments of old work, and one or two private buildings. One of the curiosities of the place is the well in the fortress, which is 203 ft. deep, and 43 ft. wide, with a double spiral staircase 6 ft. wide from the top to the bottom. Rome was reached on Wednesday, the 28th of April, and under the guidance of Mr. Russell Forbes, the remains on the Palatine Hill were examined, and the Roma Quadrata (the so-called Wall of Romulus), the house of Livia, and the Flavian Palace. In the afternoon the Church of St. Paolo Fuori le Mura was visited. This church, which was rebuilt after a fire in 1823, is one of the most elaborately-decorated churches in Rome. The upper part of the façade is completely covered with mosaic, and the interior is gorgeous, decorated with marble and gilding with a very unsatisfactory result."

The excursionists return to London this week.

Rainhill Church.—In our notice in the *Builder* of April 24th, the reredos of this church should have been stated as having been subscribed for by the congregation.

THE FIREMAN'S EXHIBITION.

UNDER this title a small but interesting exhibition of appliances and materials for extinguishing fires and preventing loss of life by fire, and of constructive materials and solutions for rendering buildings and woven fabrics fireproof, is now open at the Royal Aquarium, Westminster. Of course the well-known firms of Merryweather & Sons and Shand & Mason are represented; as also are Spong & Co. and James Sinclair with chemical fire-extinguishing engines. Perhaps the most striking feature of the exhibition is the evidence which it appears to afford of the increased resort to chemical means of fire extinction, if we may accept as evidence the great number of exhibits of that kind. Here are to be seen hand "grenades" for fire extinction, made in the form of indiarubber bladders, in glass bottles and tubes, and even in the form of artistic glass and pottery vases for display on mantel-pieces and sideboards, or in cabinets, —all these receptacles being filled with chemically-charged liquid. One ingenious application of this liquid consists in filling the glass or earthenware base or stem of paraffin oil lamps with it, the idea being that, should the lamp fall and set light to floor or curtains, the fire would be immediately extinguished by the liberation of the chemical anti-fire fluid. Of mechanical and electrical appliances for use by fire brigades and the public, there are a few good things to be seen. Amongst these we must include the electric alarms and other fittings exhibited by Mr. Julius Sax, and a very good instantaneous hose-coupling (without spring, screw, or rivet) exhibited by Mr. Edward Nunan. The automatic and other sprinklers for fire extinction are also represented by one or two exhibits.

The ordinary type of street fire-escape, as used in London, is exhibited in action by Messrs. E. H. Bayley & Co., of Southwark; and a very good and simple fire-escape for domestic use, called "The Dreadnought," and consisting of a canvas tube and folding-ladder combined, is exhibited by Messrs. Piggott Bros. It folds up into a small space, and is always ready for use. Of course, the canvas and ropes are rendered uninflammable by a chemical process. Another canvas escape, the "Ever Ready," exhibited by the patentee, Mr. H. T. Bailey, consists of a canvas tube with indiarubber bands inside it to check the descent of the persons using it. The practical use of these two escapes finds no lack of illustration, for the more juvenile portion of the male visitors to the Exhibition are not slow in availing themselves of the opportunity for pastime which they afford. A noteworthy exhibit is Woolven, Eade, & Co.'s rocket life-saving apparatus for saving life and property at fires. It is an adaptation of the rocket life-saving apparatus as used on our coasts. By it a line can be thrown over a high building and secured on the other side when other means of ascent or descent would be impossible. When we were at the Exhibition on Wednesday, the Friborg fire-escape (a German invention, apparently, and telescopic in action) was still lying on its side in the position in which it toppled over on Saturday last, when it unfortunately killed a poor man. It is evidently too lumbering, heavy, and cumbersome for hurried locomotion.

The gallery is mainly occupied by models of fire-engines and fire-escapes; one of the latter is devised so as to be extended or raised on the principle of the "lazy tongs," but we question whether it would answer in practice. In the gallery also are to be seen some very good portable fire-escapes invented by Col. Wethered, of Woolwich, as well as M. C. Duffy & Son's wood-block flooring as applied to fire-proof construction; Hitchins's fire-proof plastering; Wilkes's metallic flooring; Johnson's wire fire-proof lathing; Wright & Co.'s patent fire-proof fixing-blocks in a variety of their applications; and other exhibits connected with construction.

The archæological aspect of the subject is represented by an old manual fire-engine exhibited by Messrs. W. Rose & Co., and described as dating from 1575,—a very doubtful ascription of antiquity, we think, in spite of certain traces of those figures having been painted on the engine at some time or other; and by a larger manual engine exhibited by Messrs. Spong & Co., and which is, no doubt, of the date assigned, viz., 1780.

The exhibition is worth a visit, and will remain open until the 15th inst.

EXAMINATIONS FOR MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE Association of Municipal and Sanitary Engineers and Surveyors, established in 1873, now numbers about 250 members, all of whom are necessarily, by Rule III., "civil engineers and surveyors holding chief permanent appointments under the various Municipal Corporations, or Sanitary Authorities within the control of the Local Government Board." The objects of the Association are, by Rule II., defined to be: "(*a*) the promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer or surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other sanitary Acts; (*b*) the promotion of the professional interests of the members; (*c*) the general promotion of the objects of sanitary science." These objects are fulfilled by the holding of seven or eight district meetings over the country during the year, which afford valuable opportunities for interchange of ideas and views between the members, while the visits to works which constitute part of the programme of each meeting are fraught with many practical lessons. With a view to the improvement of the professional status and education of the holders of such appointments as those which qualify for membership, the Council some time ago came to the conclusion that it was desirable that the Association should take upon itself, as the most fitting body for such a purpose, the duty of instituting voluntary examinations and the granting of certificates of competency to candidates for appointment as borough surveyors and surveyors to local boards and other sanitary authorities, and after some consideration decided to hold two examinations in each year,—one in April, in London, and one in October in some provincial town. The April examination has just been held, the examiners being, as we announced a fortnight ago (p. 628, *ante*), Messrs. R. Vawser, M. Inst. C.E., President of the Association; Mr. W. G. Laws, M. Inst. C.E., City Engineer, Newcastle-on-Tyne; Mr. E. B. Ellice Clark, M. Inst. C.E., Hove; and Mr. Clement Dunscombe, City Engineer, Liverpool. The following gentlemen who satisfied the examiners have been granted certificates of competency by the Council of the Association, viz.:—

Angell, J. H., Leytonstone.
Ashmead, H., Clifton.
Coales, H. G., King's Lynn.
Fenton, W. C., Sheffield.
Greatorex, A. D., Toxteth Park.
Harland, A., Charlotte-street, W.
Osborne, F., Dover.
Saunders, E. C., Walthamstow.
Witts, J. W., Skelton-in-Cleveland.

LOAN EXHIBITION OF PICTURES AT THE WALKER ART GALLERY, LIVERPOOL.

IN catering for the entertainment of the numerous visitors whom Liverpool is expecting next week, among other things a very good loan exhibition of pictures and water-colour drawings has been opened in the Walker Art Gallery.

This collection has been contributed almost entirely by collectors in and about Liverpool, and is a very extensive one. It occupies seven rooms in the Gallery, and numbers about 850 works of art, many of them of great excellence, and comprises examples of most of the best-known British artists of the present and past generations.

One room is entirely appropriated to foreign pictures, belonging principally to Messrs. Medley, Oakshot, and J. Davies. Another is also set apart for drawings by the members of the "Liverpool Society of Painters in Water-colours"; while a third contains works of "The Liver Sketching Club," which latter society, consisting, when first established a few years ago, exclusively of amateurs, has lately been joined by some local artists, and their combined efforts show very creditable results.

The pictures lent by Mr. Edward Samuelson, chairman of the Liverpool Art Committee, also in themselves fill one room.

Among the works exhibited we may mention "Nausicaa," by Sir F. Leighton, P.R.A.; "Ariadne," by the same artist; "Rosalind and Celia" and "Flowing to the Sea," both by Millais; "Othello and Desdemona," by Dicksee; "A Street in Venice," by J. Holland; Bridell's fine landscape "The Temple of Venus, from the Faërie Queene"; and other fine works are contributed by Mr. A. G. Kurtz, of Liverpool.

Mr. Ralph Brocklebank lends, amongst others, Wilkie's "Letter of Introduction," Pyne's "Heidelberg Castle," Turner's "Blessing of the Adriatic," "Somer Hill," by the same artist; "Baalbec," by David Roberts, R.A., &c.

Mr. David Jardine, of Liverpool, sends "The Cherry Seller," by W. Collins, R.A.; "Coast of Normandy," by Clarkson Stanfield; an English landscape, by Callcott, R.A., &c.

Mr. Malcolm Guthrie contributes "A Summer Storm," by Constable (a charming example of the artist); "View near Llangollen," by David Cox; and a number of other fine pictures.

Mr. Arthur East, also of Liverpool, sends "View on the Surrey Downs," by W. Linnell; "Wharfdale, Bolton Abbey in the Distance," Copley Fielding, &c.

Millais's "Fringe of the Moor," the property of Mr. T. H. Ismay, is also here.

The works of Rossetti, Burne Jones, &c., are also strongly represented.

In addition to the gentlemen already named, the following should be honourably mentioned as contributing largely from their collections to this interesting exhibition:—Messrs. F. R. Leyland, G. W. Moss, Chas. Langton, J. G. Livingstone, James Pegram, A. T. Squarey, Jas. Barrow, George Rae, Benson Rathbone, G. C. Dobell, John Temple, William Coltart, and others.

The display of works of art in these rooms is highly creditable to Liverpool, and worthy of the occasion which it is designed to help to celebrate, and cannot fail to attract considerable attention on the part of all connoisseurs and lovers of art.

It is worthy of note how many pictures of the highest class, which have appeared upon the walls of our exhibitions of late years, have found final resting-places in the galleries of the wealthy citizens of Liverpool and its neighbourhood.

DELAYS IN SANITARY LEGISLATION.

IN closing the session of the Association of Public Sanitary Inspectors, Mr. Edwin Chadwick, C.B., its President, delivered an address on Saturday evening at the rooms of the Association, Adam-street, Adelphi. The veteran sanitarian is displeased with the monopoly of the time of the House of Commons by political problems and the consequent exclusion of sanitary legislation. He says that by these continued political pre-occupations the advance of preventive sanitary measures is delayed, while, silently and unheeded, ravages of life, strength, and working energy are permitted, which are more disastrous than the most terrible wars. Even in the interests of Ireland he thinks the existing pre-occupations are to be condemned, since they cause measures to be overlooked that are essential to the relief of the most distressed of the Irish population, and which might provide increased wages in the execution of productive and profitable sanitary works. The poorest and most mud-hovelled districts of Ireland were ever the most disturbed, murders, manslaughters, and other crimes of violence being as characteristic of such districts as epidemic disease. The proportions, comparing the best and worst districts from the sanitary point of view, were, as he had pointed out in 1852, as 61 to 29 in epidemic diseases, and as 72 to 32 in crimes of violence and passion. Ireland, being wetter than England, was in greater need of sanitary relief. The only measure that he believed would be effectual, that of affording relief by remunerative outdoor labour, as so successfully carried out on occasions of great manufacturing distress in England, had not been adopted, and the measures now proposed appeared to offer no means of relief for the most distressed and troubled of the Irish population. Were all the rents and taxes given to the Irish people, it could be shown that it would only bring the wages up to about half those derivable from high culture on a large scale such as prevailed in Scotland. The delay of preventive legislation created intolerable evils in one of the least afflicted districts of the metropolis, Greenwich, even when represented in Parliament by the Premier himself. The district displayed an annual excess of more than 500 preventible deaths, between 300 and 400 of which affected the bread-winners chiefly.

The loss, valued in money, he estimated at from 60,000*l.* to 80,000*l.*, and more than 14,000*l.* annually in a medicine bill, besides a loss of at least ten years of life. The seventy-seven miles of main thoroughfares of the metropolis were administered by sixty-eight independent local authorities, and the leading thoroughfare alone from Hammersmith to the East India Docks was under fourteen different boards, of which the Corporation of London was but one. Under unity of administration snow would have been removed to side ridges waiting without inconvenience for a thaw, footways would have been systematically cleaned by the "squeegee," and the jet would have been used for asphalted surfaces as in "clean-streeted Paris," and all this would have involved the expenditure of only one-eighth part of the water wasted by the present system of distribution. The purification of the air which took place after a thunderstorm indicated the increased purity of the air that would result from complete cleansing, and the annual death-rate might be reduced by at least 20,000. The principle of hydranting the streets, and putting the hose in charge of the police on the beat, had, in Manchester and Liverpool, reduced the losses of life and property by fire to one-third what it was in the metropolis; yet, notwithstanding the proposals of Sir Selwin Ibbetson's Committee in 1877, no relief had been afforded, loss of life and property had gone on increasing in all its preventible excess as well as in cases attributable to design or to pure accident. Had the plan proposed in their report on the water-supply of the metropolis been adopted, the cost would have been less by very many millions than would now be necessary, and every year of further delay was adding about a million sterling to that cost. Notwithstanding the expenditure of 6,000,000*l.* on the purification of the Thames, estimated originally to cost 3,000,000*l.*, its condition had been justly pronounced by Lord Bramwell's Commission as "a disgrace to the metropolis and to civilisation," and 4,000,000*l.* more were about to be spent, in order to throw into the sea the means of producing the milk of 200,000 cows. In the concluding part of Mr. Chadwick's address the members of the Association were adjured to make themselves masters of every detail connected with the practical use of the smoke-test for proving the drainage of houses throughout the United Kingdom. By it they could make mental darkness visible, and show, better than by any previous method, how many millions of people are living, eating, and sleeping in the midst of invisible gases, fraught with disease and death.

At the meeting, a report of the proceedings of the 8th of April was distributed, when a deputation from the Association had an interview with Mr. Stansfeld, the new President of the Local Government Board, on the introduction of Mr. Chadwick. In addition to the undermentioned points,—brought before the Board by Mr. Jerram, the Chairman of the Council, as points unanimously adopted by the Association,—papers on sanitary statistics, the position of the "Sanitary Inspector," and "Tenure of Office" were presented to Mr. Stansfeld, who, in reply to the spokesman of the deputation, expressed his satisfaction with the comprehensive treatment of the subject by the speakers. The points submitted by the deputation were:—

"That the powers, responsibilities, and emoluments of Sanitary Inspectors should be largely increased.

That a minimum rate of salary for Sanitary Inspectors should be enacted.

That Sanitary Inspectors shall be duly qualified, and only removable from their appointments for proved misconduct or incompetence.

That Sanitary Inspectors shall initiate proceedings on behalf of the Local Authority for the abatement of nuisances by serving notices requiring all necessary works to be done for that purpose. All such notices to be read to and approved, or otherwise, by the Local Authority, who shall, if satisfied thereon, order proceedings to be taken against the offenders.

That the position of the Metropolitan, Urban, and Rural Inspectors be assimilated.

That in order that the position of the Sanitary Inspectors may be strengthened, it is expedient that the appointment of all officers should be approved of by the Government Sanitary Authority, and no officer dismissed by any Local Authority without final appeal to, and approval of, the said Government Sanitary Authority."

The proceedings of Saturday last concluded with a vote of thanks to Mr. Chadwick, on the motion of the Chairman of the Council, Mr. Jerram, seconded by Mr. Rains, and supported by Mr. Alexander (Shoreditch) and other inspectors.

In replying to the vote of thanks, Mr. Chadwick said that a proposition had been submitted to Lord Granville to send out to the Australian and other colonies some of the instructions on sanitary matters issued at a former period in this country, and the suggestion had been favourably received on the understanding that the information given would be brought up to date. The home death-rate of 10 or 12 per 1,000 for the nobility, 20 per 1,000 for the middle, and 30 per 1,000 for the working classes, was enormously increased in the colonies, the death-rate, with every advantage of pure air and genial climates, exceeding even the rate of 40 and 45 per 1,000 of the slums of great cities. It was a terrible fact that in Australia and some other colonies more than half the children born were in their graves before their fifth year.

THE GEOLOGY OF THE EARTH'S SURFACE IN ITS SANITARY ASPECT.

FROM an interesting paper read by Professor W. Fream at the meeting of the Surveyors' Institution on Monday evening last, on "The Geology of the Surface in its Practical Aspects," we cull the following passages:—

"A full knowledge of the nature and distribution of the superficial deposits is a necessary preliminary to a thorough comprehension of local conditions favourable to water supply and drainage. Water derived from surface springs is always more or less open to suspicion, and the recent progress of medical and sanitary science has indicated clearly enough the nature of the dangers which may lurk in drinking-water obtained from such sources. The growing density of the population is, even in rural districts,—perhaps I ought to say *particularly* in rural districts,—calculated to increase rather than to diminish this source of danger. Cases in which shallow wells have run dry when adjacent cesspools have been abolished are by no means hypothetical, and filtration through a few feet or yards of porous, sandy, or gravelly rock is utterly inoperative against organic poisons. The establishment or maintenance of ponds is another important matter, especially in agricultural districts; it is a circumstance which is largely dependent on the character of the soil and subsoil, and on the nature of the available sources of water supply.

The unhealthy character of some districts is associated with the nature of the soils, and it may be regarded as an established fact that certain classes of diseases are specially addicted to certain soils. On soils pervious to water the prevailing diseases are of the enteric or typhoid type; on impervious soils they are consumption and other lung diseases, and rheumatism. In the former case foul drinking-water obviously suggests itself as the medium of contagion, for when the level of the ground water is low, percolation is free, and then it is that most of the zymotic diseases are rife. Professor Pettenkofer's continuous daily observations on the height of the ground water at Munich demonstrated that when the ground water fell the death-rate rose, typhoid fever in particular inducing fatal results. Not long ago Mr. Baldwin Latham prepared a diagram showing the connexion between low ground water and typhoid fever at Croydon. The ground air, moreover, is as important from a hygienic point of view, particularly in relation to dwelling-houses, as is the ground water. The quantity of ground air varies with the nature of the soil, being least in clays, more in loams, and most in sands or gravels; it varies also with the quantity of moisture in the soil, and, in any given soil, it approaches the maximum when the ground water is at its lowest. The circulation of air in the soil is greatly influenced by the temperature and pressure of the atmosphere, and a falling barometer is a danger signal, bidding us beware lest the offensive gaseous emanations from defective drains and cesspits should be given off at the surface of the ground, and, perchance, beneath the dwelling-rooms of a house, where the draught caused by fires will aid in determining the course of the effluvia. Dr. J. W. Tripe, Medical Officer of Health for Hackney, has traced the path of injurious gases through more than 30 ft. of loose soil. Some years ago, Mr. G. J. Symons, F.R.S., Secretary of the Royal Meteorological Society, advocated the collection, by a commission of experts, of a complete statistical record of the health-rate, death-rate, geology, climate, water-supply, drainage, and general conditions of all our mineral water, sea-bathing, or pure-air resorts; and he maintains that the collection of such statistics would have both direct and indirect beneficial effects infinitely beyond the cost of the inquiry. The temperature, both of soil and of ground water, is obviously a matter of importance.

The reason that sandy and gravelly soils have usually received town populations before clayey ones,—a fact which was well illustrated during the settlement of the metropolitan districts,—is that, on the former, water was as easy to obtain as, on the latter, it was frequently difficult; the sanitary differences between the two kinds of soil are branches of very recent knowledge. So intimate is the relation between the geology of the surface and the conditions controlling health, that the University of London in its 'Examination in Subjects relating to Public Health,' which is open only to its Graduates in Medicine, requires candidates to give evidence of a knowledge of 'Geology, as regards general knowledge of Rocks, their conformation and chemical composition, and their relation to underground Water, and to drainage and sources of Water-supply.' Among legislative enactments, the Rivers Pollution Prevention Act is not without interest and significance in the same connexion."

THE PROPOSED MUTILATION OF THE CHARTERHOUSE BUILDINGS.

A PUBLIC meeting, convened by the Society for the Protection of Ancient Buildings and the Commons Preservation Society, was held on Thursday afternoon last in the hall of the Society of Arts, John-street, Adelphi, to protest against the proposed mutilation of the Charterhouse and the destruction of the open space. The Right Hon. G. Shaw-Lefevre, M.P., presided.

Mr. H. N. Story-Maskelyne, M.P., proposed the first resolution, as follows:—

"That, in the opinion of this meeting, irremediable injury will be inflicted on the metropolis by the mutilation of the Charterhouse in the manner proposed by the Bill promoted by the Governors of Sutton's Charity, and now pending in Parliament."

Mr. James Bryce, M.P., seconded the resolution, which was supported by Mr. Henry Maudslay; and, after some remarks by Mr. Lee, of the Charterhouse, in defence of the Governors of Sutton's Charity, was carried unanimously.

Mr. William Morris next moved:—

"That the open land within the bounds of the Charterhouse, situate in a crowded district of the metropolis, the condition of which has recently been shown to be highly insanitary, is of the greatest value, as conducing to the health of London; and its devotion to building purposes, in order to add to the funds of an already wealthy charity, would be a scandal."

The resolution was seconded by Mr. T. J. Cobden-Sanderson, supported by Mr. Richard Chamberlain, M.P., and carried without a dissentient.

The third resolution was proposed by the Hon. Walter H. James, M.P., as follows:—

"That no sufficient reason has been shown for the abolition of the hospital founded by Thomas Sutton in the Charterhouse, or for setting aside the expressed wish of the Founder, and the Act of Parliament passed to give effect to that wish, that the Charterhouse should be preserved as the home of the charity, and should not be turned to profit."

Mr. J. T. Micklethwaite, F.S.A., seconded the resolution, which was supported by the Hon. R. Grosvenor, and unanimously carried.

Lord North moved the fourth resolution, which was seconded by Mr. Hunter:—

"That the chairman be authorised to sign and present to the House of Commons a petition against the Bill, and that a deputation wait upon the Vice-President of the Council to enforce the views expressed at this meeting, and to solicit the aid of the Government in securing the withdrawal or rejection of the Bill."

Mr. Rowlands supported the resolution, which was also unanimously agreed to.

Proposed Monument to Abraham Lincoln.—The Bill recently introduced at Washington by Mr. Cullum to appropriate a sum of 500,000 dols. for the erection of a monument to Abraham Lincoln in that capital has been reported upon very favourably in the Senate by Mr. Sewell on behalf of the Library Committee. In the course of a speech respecting the Bill, Mr. Cullum said that the provisions of the measure, except as to the amount and name, were precisely similar to those in the Bill referring to the monument in memory of General Grant.

THE ART-UNION OF LONDON.

ANNUAL MEETING AND PRIZE DISTRIBUTION.

THE fiftieth annual meeting of the Art-Union of London was held on Tuesday last, in the Adelphi Theatre. The chair was taken by Mr. James Hopgood, J.P., in the absence of the President, the Earl of Derby, who wrote regretting that his duties as a Commissioner at the opening of the Colonial and Indian Exhibition would prevent his taking the chair on this the first annual meeting of the Art-Union since he had been elected to the office of President.

Mr. Hallett read the annual report, from which we extract a few paragraphs:—

"In announcing to the subscribers the total amount of contributions of the year at 7,273*l.* 7s., though it shows a considerable decline from the amount of last year, the Council do not feel called upon to take a desponding tone, for, looking at the general depression prevailing in this country,—which greatly affects every kind of enterprise,—as well as the loss occasioned by bad harvests and the low price of wood in Australia, they think they are justified in regarding the amount as a satisfactory contribution to the encouragement of art; and, from the reports received on all sides, they have no hesitation in stating that, with the return of more prosperous times, the Art-Union may fairly be expected to show that general level of income which has prevailed for above forty years.

The amount to be expended on prizes will be thus allotted:—1 work at 100*l.*; 1 work at 75*l.*; three framed original drawings, by the late E. M. Ward, R.A., being replicas of frescoes in Westminster Palace, viz., 'The Last Sleep of Argyll,' 'The Execution of Montrose,' and 'General Monk declaring for a Free Parliament,' valued at 70*l.* each; 1 work at 60*l.*; 2 works at 50*l.* each; 3 works at 45*l.*; 3 at 40*l.*; 4 at 35*l.*; 5 at 30*l.*; 5 at 25*l.*; 8 at 20*l.*; 20 at 15*l.*; 20 at 10*l.*; 80 sets of designs from English history; and 40 portfolios of 'Animal Life,'—making, with the prizes given to the unsuccessful members, 396 prizes.

The following is a brief summary of the receipts and expenditure:—

Amount of subscriptions		£7,273	7 0
Allotted for prizes	£2,113 0 0		
Set apart towards providing works of art for accumulated payments	472 0 0		
For print of the year, exhibition, report, and reserve	1,975 12 6		
		4,560 12	6
Agents' commission and charges, advertisements, printing, postage, rent, &c....		2,712 14	6
		£7,273 7	0

In August last, the Art-Union found itself without a president by the death of Lord Houghton. As Mr. Monckton Milnes, his lordship had been, for many years, a member of the Council, and on the death of Lord Monteagle in 1866 he was elected President. His lordship took the chair at the annual meetings whenever he was in England and his health permitted him, and frequently presided at the meetings of the Council. . . . .

In succession to Lord Houghton as President, the Council, having ascertained his lordship's willingness to accept the post, unanimously elected the Right Hon. the Earl of Derby, who had been one of the Vice-Presidents since the year 1869, and to whom, from his interest in all undertakings tending to the intellectual development of the people, the Council feel justified in looking for an active co-operation.

In August last died Professor Donaldson, at the ripe age of ninety-one. Professor Donaldson was the sole survivor of fourteen architects who, on the 13th of May, 1834, met at 14, Regent-street, and passed a resolution that it was desirable to form an institution for the promotion of architecture. After various meetings, a well-digested scheme was drawn up and adopted. The Institute of British Architects was incorporated on the 15th of June, 1835, with Lord de Grey as President, and Mr. Donaldson as one of the Vice-presidents. From the day of its formation, Mr. Donaldson was one of the leading spirits of the Institute. . . . . He was one of the founders of the Art-Union, and remained one of its most useful and active supporters to the last. He was one of a small committee which drew up an admirable report on the possibilities of the Association, which was of great service in shaping its course."

After alluding to the decease of Mr. James Fergusson, the historian of architecture; of Mr. Thomas Thornycroft, sculptor; Mr. Randolph Caldecott, and Mr. R. Thorburn, the Report referred to the question of copyright in the following terms:—

"A measure of great importance, not only to artists and authors, but to all those who take an interest in art, and desire to secure to authors the benefits resulting from the works of their own brains, is a Bill to amend and consolidate the laws relating to copyright. It has been prepared by the Incorporated Society of Authors, and there is every prospect that it will be shortly embodied in an Act of Parliament. The Bill proceeds [mainly on the lines laid down by the Commission of 1878. It consists of six parts, of which the first four,—that is, copyright generally, dramatic and musical copyright, artistic copyright, and foreign and colonial copyright—are so far complete in themselves that they could, if occasion required, be readily dealt with *seriatim*. The remaining divisions affect registration and procedure. The Bill does not merely patch up the old Acts, and pretend to render them workable by providing new machinery, it makes a clean sweep of the whole of them, substituting an intelligible code of regulations for their uncertain rules. It proposes to bring the distinct classes of work to which copyright attaches, for the first time, within the operation of analogous legal principles. The Bill consists of rather more than 100 clauses, and it has some claim to rank as a code. We shall refer particularly only to the law relating to fine art.

At present copyright in engravings lasts for twenty-eight years from publication; in painting for the artist's life and seven years; in sculpture fourteen years from the first 'putting forth or publishing' of the work, or if the artist lives so long for another such term. All these arbitrary distinctions it is now proposed to abolish in favour of one uniform term for the life of the author, and thirty years after his death; a period which seems well calculated to meet the necessities of the case, and was recommended by the Commissioners of 1878. This illustration will suffice to indicate the sweeping character of the new Bill.

Another instance of the confusion resulting from the present state of the law is to be found in the distinction as to registration. In the case of books and paintings the effect of registration differs, since it is only in the former case that the owner can take proceedings for an infringement prior to registration. The Bill deals summarily with these distinctions, establishing a copyright registration office, where any copyright can be registered. The artist is to have copyright both in his work and in the design or original, and this right includes that of reproducing the design in any way. It would, for instance, give a sculptor the power of prohibiting the photographing or engraving of his work.

An important declaration is made of the law as to copyright in photographs, which is to belong to the taker of the negative. In the case of cartes-de-visite taken on commission, however, it is very properly proposed, irrespective of copyright, to prohibit their being sold or exhibited in shop windows without the consent in writing of the person for whom the work was executed.

It is proposed that the measure shall extend to the whole of Her Majesty's dominions, so that it is a serious attempt to deal with the vexed question of copyright in the colonies as well as at home.

Such are the main features of the forthcoming Bill, and they will suffice to show that it is a praiseworthy piece of work. Much, of course, yet remains to be done before it can be regarded as wholly satisfactory in point of detail, but it goes far to render the speedy settlement of this great question at any rate possible."

Having referred with approval to the work of the Home Arts and Industries Association, the Report spoke of the courses of lectures on the Egyptian and Assyrian antiquities in the British Museum which have been given of late years by Mr. Newton and others making tours of the galleries, and illustrating their discourses by reference to the several objects exhibited, and asked whether it might not be worth while to establish something of the same sort in connexion with the National Gallery and other collections:—

"Suppose some competent person were selected who should take some special painting, and give to those standing in front of it a '*catalogue raisonné*' of its elements. He would indicate the general intention of the work, whether the symbolical meaning of some masterpiece of Raffaelle or Murillo, or the more homely but still subtle and intensely realistic representation of interiors of De Hoogh or Van Ostade; explaining the manner in which the master grouped his figures to produce a harmonious composition,—how one part was made to lead up to and give force to another,—the modification of effect produced by direct and reflected light,—the simpler principles of perspective,—the force due to the contrast or harmony of different colours,—the skill displayed in foreshortening the figures,—the effect of solidity acquired by the play of light and shade,—the principle which regulates the reflection of objects on water,—and shortly, all those points which illustrate the genius and technical skill of the artist, apart from the mere '*motif*' of the work, which as a general rule is all that the average spectator takes in. Who can doubt that, having picked up some at least of these elements, the visitor will be enabled to go on to other pictures, and to retail for the benefit of his companions, those points, few perhaps, and but roughly comprehended, but which may have the effect of making him ponder on them as far as they go and seek opportunities of learning more. At any rate, it cannot be said that the experiment is not worth making.

As bearing, in some degree, on the foregoing subject, highly deserving of recognition is the fact that the Dean of Westminster, every Saturday afternoon, personally escorts a party of working-men over the Abbey, and explains to them the design and intention of the several monuments."

In reference to the presentation work for the coming year, the Report, in conclusion, says:—

"It is long since the Council provided for the subscribers an English landscape engraving, and, believing that such a subject would be acceptable, especially to those dwelling in distant lands, they commissioned Mr. Leader, A.R.A., one of the most popular landscape painters of the day, to paint a picture for the purpose. The artist chose for the subject a view at Streatley, a village on the Thames, and a very favourite haunt of artists from the charming combination of river scenery, hills, and woods, which diversify the spot. . . . . The painting has been interpreted in black and white with marked power by Mr. Willmore, and the Council feel no doubt that it will be very popular with the subscribers. The oil painting, worth 300*l.*, will be the chief prize in the next distribution."

On the motion of the Chairman, seconded by Mr. Zouch Troughton, and supported by Mr. Henry Maudslay (who made a few suggestions with the view of making the objects of the Art-Union better known), the Report was unanimously adopted.

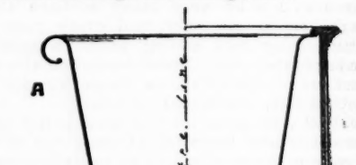
The Chairman next moved a vote of thanks to Mr. Zouch Troughton, the honorary secretary, for his services during the past year, and expressed the deep regret which he felt in having to announce that the senior honorary secretary, Mr. E. E. Antrobus, J.P., died on the previous day (Monday). This was seconded by Mr. Gooden, and briefly acknowledged by Mr. Troughton.

Votes of thanks were also given to the auditors (Messrs. G. J. Fearis and J. Walker); to Messrs. A. & S. Gatti for granting the use of the theatre for the meeting; and to the ladies who rendered assistance in connexion with the drawing of the prizes.

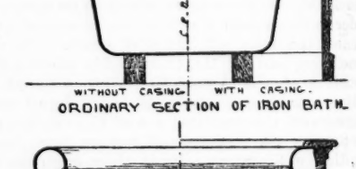
It may be added that the principal prize (value 100*l.*) fell to Mr. W. G. Judge, Dorking; and the three drawings by the late E. M. Ward, R.A., to subscribers at Oporto, Lenhardt (Victoria, South Australia), and Peterborough (Canada) respectively.

AN IMPROVED BATH.

THE object of the form of bath shown in the accompanying sections is to prevent the running up of water over the edge and on to the floor, which constantly and inevitably happens when a large bath is used with any depth of water, and the water is agitated during the use of it. It is an odd instance of the way in which so many things are made according to custom rather than common sense, that large standing baths, which are always emptied by a plug at the bottom, and never can be emptied by pouring over the rim, are, nevertheless, habitually made with a curve over at the rim, in the same way as a wash-hand basin, which (when not a fixture) is always emptied by pouring over the rim. The curved-out rim is therefore the natural and proper way of making the latter; whereas in a large fixed bath it is an object that the water should *not* get over the rim. Reverse the curve, therefore, and the water,—however it may run up the side during use,—will not run over the edge and give the housemaid extra work in mopping up floors, or occasionally percolate through the ceiling below.



ORDINARY SECTION OF IRON BATH.

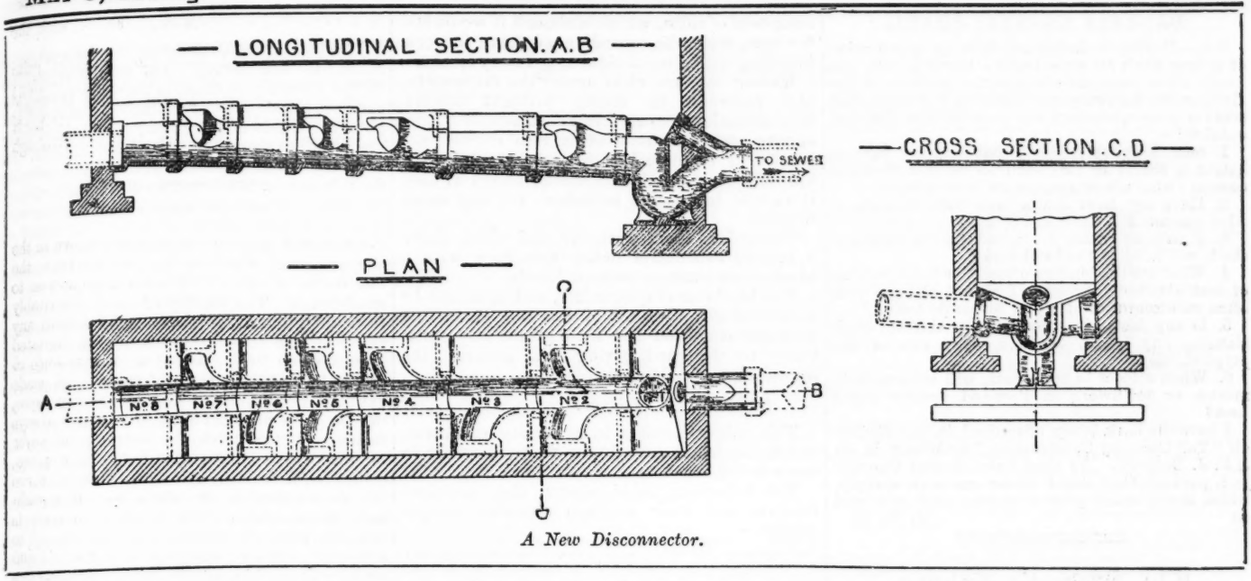


SECTION OF PATENT BATH [IRON].

SECTION OF PATENT BATH [CONCRETE].

The reverse curve is so made that it does not project inward beyond the line formed by the side of the bath in its ordinary form, and presents no edge or angle internally. It is patented by Mr. H. H. Statham, and the right to the patent is made over to Mr. Jennings, of Lambeth, who is prepared to make and supply the bath.

Cutting of Glass by Heated Air.—The *Centralblatt für Glas Industrie* remarks that heated air or gas is now frequently used in place of the former methods of cutting glass. A pipe leads the air or gas against the object to be cut, which is fixed close before the pipe, and rotates on its axis. In this way a small circle of heated glass is produced, which is damped, and the glass can then be cut with relative ease at the place desired. The process is described as being rapid and effectual, being likewise surer than any hitherto employed.



A New Disconnector.

A NEW DISCONNECTOR.

THIS new drain or sewer disconnecting chamber and syphon trap combined is invented and patented by Mr. Marsh Simpson, C.E., who describes its objects as follows :—

"It is a development of and improvement upon the 'Kenon' air-chamber first introduced by Professor Corfield and Mr. Mark H. Judge some years back. The object of the design is to provide chamber sections in stoneware, with or without branch channels, as required, complete, thus dispensing with separate channel pipes and cement-rendered floors. The plan and sections given above with the following quotation from the registered description of the design fully explain it.

'The design is to be made of glazed stoneware consisting of eight different sections, all fitting together so that they may be used either separately or in any combination, and is applicable for the shape or configuration thereof, viz. :—

1. Syphon trap and floor.
2. Floor with three channels of equal size.
3 and 4. Floor with two channels of equal size, right and left hand.
5. Floor with three channels of unequal size.
6 and 7. Floor with two channels of unequal size, right and left hand.
8. Floor with one channel only.'"

We may add that the disconnector is manufactured by Messrs. John Bolding & Sons, of South Molton-street.

NEW BUILDINGS FOR POOR LAW ADMINISTRATION.

Workhouse Schools for the Edmonton Union.—The Chase Farm Schools, erected by the Guardians of the Edmonton Union on the Ridgeway, Enfield, have lately been opened. The buildings have been erected at a total cost of 79,000*l.*, which includes the sum of 12,000*l.*, the cost of the site, which is 44 acres in extent. The architect of the building was Mr. T. E. Knightley, of 106, Cannon-street, E.C., and the builder Mr. Charles Wall, of Chelsea. The buildings comprise a lodge with long porch for the protection of new corners, whilst the necessary formalities of admission are being observed; then of two separate buildings, which may be termed quarantine buildings, as in each, each child will pass fourteen days before being received into the family. The main building consists of a centre and three surrounding wings. In the front of the centre are the committee and master's rooms, and sleeping accommodation for domestic servants; behind are bakery, work-rooms, kitchen, dining-hall, swimming-bath, laundries, and workshops, arranged with subsidiary kitchen and laundries to be used for training the girls and fitting them for domestic service. The wing on the left is for girls, that on the right for boys, and that in the rear for infants. In each of those the school, class and play rooms, and lavatories are below, with dormitories, baths, and water-closets above, arranged so that in the case of fire or epidemic a floor or block, or part of it, may be isolated, as the dormitories are divided and have separate staircases. The buildings are on what may be called the subdivided pavilion system. Beyond these are two cottage homes, each for two foster parents, and a family of thirty children, the man teaching the boys, and the woman instructing the girls. In the distance is an infirmary for infectious cases, with separate laundry. Provision has been made for future enlargement to any required extent without having to hem in the existing buildings,—an important point not always secured, even where it might be.

The Holborn Union Workhouse Buildings at Mitcham.—The large and costly new workhouse, which has for some time past been in course of erection at Mitcham for the Guardians of the Holborn Union, is fast approaching completion. The buildings are situated in Merton-lane, opposite the Mitcham and Wimbledon Gasworks, and occupy an area of about eight acres. They are built on the pavilion principle, and contain seventeen blocks, twelve of the blocks consisting of the inmates' wards. These are arranged on each side of the site, and are three stories in height. All the blocks are connected by covered and glazed corridors. The administrative blocks are in the centre of the site, and are three in number, the front block of two floors facing Merton-lane, containing the master's residence, the board-room, and committee-rooms. At the rear is the block containing the dining-hall, a large apartment 100 ft. by 50 ft., which is also intended to be used as the workhouse chapel. The kitchen, immediately adjoining, is 63 ft. by 24 ft. Adjoining is the laundry block and engine-house, whilst at the extreme rear is the infirmary, a separate and distinct block, three stories in height. The porter's lodge and the receiving-wards are at the entrance in Merton-lane. The inmates' wards, facing the Merton-lane elevation, are surmounted at each angle by towers, whilst the central administrative block is entered by a bold pedimented doorway in Portland stone. The whole of the buildings are faced with stock brick, on blue Staffordshire brick bases. The buildings have been erected from the designs of Messrs. H. Saxon Snell & Sons. Messrs. Wall Bros. are the contractors. Mr. J. H. Caine is clerk of the works, and Mr. Saunders is foreman. The whole of the wards will be heated by hot-water apparatus, furnished by Messrs. May Bros., of Holborn, who are also supplying the general engineering work. The gasfittings are by Messrs. Perry & Sons, of Westminster. The whole of the stone paving will be executed by Mr. Alfred Walker, of Golden-square, in Walker's granolithic pavement. A water-tower, with tank to hold 25,000 gallons of water, is to be erected, at a cost of 2,500*l.* The estimated cost of the buildings is upwards of 60,000*l.* In connexion with the new workhouse, and the industrial schools in Mitcham-road immediately adjoining, new gasworks are about to be erected.

Ranmoor, Sheffield.—Stained glass has been inserted in another of the windows in the eastern apse of the Church of St. John, Ranmoor, Sheffield. Messrs. Powell Bros., of Leeds, are the artists, and the window is to the memory of members of the Ellison family, and represents some of the chief events of the Passion.

"ROBINSON'S CEMENT."

SIR,—Referring to the correspondence in your recent issue between Messrs. Howe and Messrs. Robinson [pp. 624, 658, *ante*], we are surprised to learn that the latter claim a patent right in the admixture of borax or tincal with calcined gypsum, it being widely known that for the past thirty years we have manufactured and largely sold a cement called "Parian," which is a combination of the above ingredients; and, as Messrs. Howe point out, our late senior, Mr. A. Francis, took out a patent as far back as May, 1856. We also agree with Messrs. Howe that alum is a very old ingredient in the manufacture of marble cements.

It is admitted by practical plasterers that Parian cement, made under the process we have described, is more reliable than any other cement of its kind, being free from liability to efflorescence even when on a backing of Portland cement, and being capable of taking paint, paper, or polish within forty-eight hours of being used.

FRANCIS & CO.

NEWCASTLE-UNDER-LYME PUBLIC BUILDINGS.

SIR,—The authorship of the first premiated design for the above buildings is, in last week's *Builder*, attributed in error to us solely, whereas it was shared by ourselves, Mr. W. H. Sugden, and Mr. John Blood.

The plans as now adopted certainly do not present themselves to great advantage in your illustrations of the 24th ult., owing, doubtless, to the fact of their reproduction from ordinary tracings. But we hope in due course to place the later design in perspective in a better light.

W. SUGDEN AND SON.

Leek, May 3, 1886.

*** This is the first intimation that has reached us that any other architects than Messrs. W. Sugden & Son were concerned in the first design of this poly-architect building.

TRURO CATHEDRAL CENTRAL TOWER FUND.

SIR,—Will you allow me to make one final appeal for the fund now being raised for the purpose of carrying up the lower stage of the above?

In answer to my two former appeals, a sum of 866*l.* has been promised, but this is far short of the amount required, viz., 2,874*l.* We have now reached such a point in the work that it must *at once* be decided whether we carry up this portion or carry the transept roof through, thus entirely obliterating this essential feature from the design. I am the more anxious to do this work now to avoid paying off a good many men (who have now been with us from four to six years), in the present time of slackness and difficulty of getting work.

Will not some influential person take the matter up, and try and raise the 2,000*l.* required, by collection or otherwise. Or, failing this, surely there are 2,000 persons amongst your numerous readers who, without much self-denial, could contribute 1*l.* each, and the amount would be at once raised. Let me press upon all who see this *at once* to act on this suggestion; let no one hold back and say there are plenty without me. If each will look upon himself or herself as *the* important one, and kindly send me only 1*l.*, I shall soon have the pleasure of writing to say the amount has been made up and the work going on.

ROBERT SWAIN,
Clerk of Works.

BREWERY CHIMNEY-SHAFT.

SIR,—Having to design and draw up specification of a large shaft for an extensive brewery, will you kindly allow me to ask through the medium of the *Builder*, the following questions, in the hope that some of your subscribers will give me their practical opinion:—

1. Some architects specify that for every yard in height a course or two shall be built in Portland cement: what advantage is there in so doing?
2. Have any large shafts been built throughout with concrete?
3. If exhaust steam is turned into a chimney-shaft, will it injure the brickwork?
4. What are the binding clauses for the supplying of best Portland cement? I should like one from some well-known company or corporate town.
5. Is any instance known of a chimney-shaft standing any length of time when out of the perpendicular?
6. When subject to great heat, will brickwork in mortar or brickwork in Portland cement stand best?

I have the book lately advertised in the *Builder* on "Tall Chimney Construction," by Messrs. R. M. & F. J. Bancroft. As they have studied the subject, perhaps they would favour me with a reply, which would benefit your numerous readers as well as

J. H. G.

The Student's Column.

OUR BUILDING STONES.—IX.

MINERALS COMMONLY FOUND IN STONE.

BEFORE proceeding to examine the sections of stone which have been cut and ground, it may be well, perhaps, to describe briefly a few of the minerals which most commonly occur in them in considerable proportions; for it is quite evident, as most rocks are made up of a variety of minerals, that unless we are able to distinguish the principal minerals under the microscope, we shall be able to make but little progress in microscopic analysis.

Minerals crystallise in different forms, and in such characteristic manners that their identification often rests, to a great extent, on what is called their crystallographic forms. The axes of crystals are referred according to their number, relative position, and relative lengths, to six different systems. It does not come within our province to describe these systems. The student will find information on this point in any elementary treatise on mineralogy.

The mineral which will be found to form a large per-centage of many sandstones and granites is

Quartz.

In its purest form, quartz is white, being composed wholly of silica. As a constituent of building stones silica may occur as,—

1. Crystallised quartz, forming, with other minerals, a thoroughly crystalline mass, having no glassy matrix, as in granite.
2. In crystallised particles or little grains, as in sandstone.
3. Filling minute cracks, or performing the part of the matrix or cementing material of a sedimentary rock.
4. Taking the place of a pre-existing mineral, as in a stone containing silicified shells.

Quartz may be crystalline or non-crystalline. Where it is found filling veins and cavities in rocks, and so does not form one of the original constituents of them, it is called "secondary quartz."

Flint consists of an intimate mixture of crystalline silica, which is insoluble, and of amorphous silica. Chalcedony is silica, having an obscure or minutely crystalline structure.

Practically the quartz found in stones used in building operations is insoluble, and if a stone containing it decomposes, it is owing to the inferiority, in point of durability, of other minerals of which it is made.

The destruction of a stone may be somewhat retarded by the manner in which the silica is disseminated throughout. If it exists in the form 2, described above, the weathering depends on the character of the matrix. If silica itself should form the matrix, by enveloping particles which might be more susceptible to weathering, it, to a great extent, preserves it. In time, however, the exterior of the stone might become pitted with little holes, by reason of the decomposition of the particles exposed to the atmosphere. Such a stone would be quite unfit for any delicate mouldings.

If we get conditions 2 and 3 together, the stone would be almost wholly, if not quite, composed of silica, which, although it would last for ages, would be exceedingly difficult to work, breaking with a conchoidal or splintery fracture.

Quartz appears clear under the microscope, and polarises in strong brilliant colours. Minute enclosures of foreign substances, little specks, and thousands of minute cavities are frequently seen dotted over the crystal. Its appearance is so characteristic, however, that it cannot be easily mistaken for any other mineral.

Chalcedony looks granular, and often shows a minute concentric radial structure, with a black cross between crossed Nicols.

The hardness of quartz is 7, and it cannot be scratched with the point of a knife. When in a granular condition the little grains may sometimes be detached, giving the mineral the appearance of being scratched.

Felspar.

This mineral exists in a variety of forms, and is important enough for us to describe in some detail.

The following table shows the principal felspars, and their average chemical composition:—

Name of Felspar.	Silica.	Alumina.	Potash.	Soda.	Lime.
Orthoclase	64·60	18.50	16·90	...	...
Albite	68·62	19·56	...	11·82	...
Oligoclase	63·70	23·95	1·20	8·11	2·05
Labradorite.....	52·90	30·30	...	4·50	12·30

Orthoclase often contains small proportions of lime, iron, magnesia, and soda. Its colour is a dirty white, grey, or pink. It crystallises in the monoclinic system. The other three felspars crystallise in the triclinic system.

Felspar is one of the essential constituents of granite, and on the power of its resistance to weathering the durability of that stone mainly depends. We are sometimes apt to consider granite as a good weathering stone, without inquiring into any particulars concerning it, and although as a rule it is exceedingly durable, as a matter of fact, unless the felspar be of a durable character, it may weather quite as easily as a bad limestone or sandstone. For instance, much of the granite used in the buildings of Dublin is of inferior quality, being so rotten as to become quite worthless; whilst other kinds are durable.*

In the decomposition of felspars, which may be represented as silicate of alumina combined with silicates of potash, soda, and lime, the alkali or lime is removed in combination with a portion of silica, and there remains as the final result of the process a hydrated silicate of alumina, or clay. The potash felspar orthoclase is, under ordinary conditions, much less subject to such a decomposition than the soda felspar, albite, or those which, like labradorite, contain both lime and soda. Both Mitscherlich and Bischof have remarked that where albite and orthoclase are associated, the former may be found decomposed and friable, whilst the latter is still unaltered. This change of felspar is favoured by mechanical division, which multiplies the surfaces exposed, so that when a felspathic rock is triturated with water, small portions of silica and of alkalies are taken into solution. If the decomposing rock contains, like many granites, both potash and soda felspar, the latter, being first attacked, will be rendered friable, and eventually reduced to the condition of clay.†

Under the microscope orthoclase can be recognised by its characteristic cleavage, rectangular cross-hatching, strong colour, and dirty turbid-looking appearance. It often presents a very irregular crystalline form, and commonly occurs in twins, which ordinarily polarise in different colours on either side of a median line.

Triclinic felspars in polarised light usually show a series of parallel bands, or twin lamellæ as they are called, which polarise in various colours. The student will find excellent information on the microscopic determination of felspars from Fouqué et Michel Lévy, "Minéralogie Micrographique," pp. 209–227; Rutley, "Quarterly Journal of the Geological Society" (1876), p. 479; and "Study of Rocks," pp. 86–104.

* See the *Builder*, vol. XXX. (1872), p. 1021.
† See "Geol. of Canada" (1863), p. 570.

Mica.

The two commonest forms of mica are termed muscovite and biotite. The former crystallises in the rhombic system, is optically biaxial, and consists principally of silicates of alumina and potash. Oxide of iron, soda, fluorine, and water are usually present in variable quantities. Its ordinary colour is silvery white, but occasionally dark brown or black specks of the mineral may be seen. Muscovite stands the weather very well, and little plates of it may be found on decomposed granite, apparently unaffected by the action of the weather; whilst the felspar has rotted away. This mica is often found in sandstones. The fissility of many flag-stones is frequently due in a great measure to its presence along certain lines, so that the surfaces of paving stones are often covered with this glittering mineral. Under the microscope, muscovite exhibits clear colours and is transparent. As in the case of most minerals distributed promiscuously throughout a rock, the section for microscopic examination being cut in any direction, it is not easy to give all the rules for the determination of this mica. Under ordinary circumstances the sections do not often coincide with the cleavage of the mineral, but cut the planes of cleavage at different angles, which causes thin parallel lines to appear in two different directions.

When, by design or accident, the section is cut parallel to the basal cleavage a tolerably strong chromatic polarisation is shown, thus differing from biotite, which, under the same conditions, appears dark between crossed Nicols.

Dichroism is faintly exhibited.

Biotite is also called the magnesian mica and crystallises in the hexagonal system. Its chemical composition is silicate of alumina and magnesia, with a little potash and iron. Its colour may be either black or dark green. It is not so durable as muscovite, assuming a white, soft crust under the action of the weather. Ordinary sections of the crystal are strongly dichroic.

Mica is very elastic; its degree of hardness is so variable that it cannot be stated with any pretensions to accuracy.

Hornblende.

This mineral crystallises in the monoclinic system. Its chemical composition is "silicate of protoxide of iron, magnesia, alumina, lime, and protoxide of manganese, with frequently a little hydrofluoric acid and water."*

There are two principal varieties of hornblende; one has a considerable proportion of alumina, and the other contains very little, sometimes none.

The former is generally of a dark green, black, or brown; the latter of a pale green, white, or grey colour.

The non-aluminous hornblendes do not often occur in stones largely used for building, but the aluminous kinds are found in syenite and granite, where, in weathering, the silica, lime, magnesia, and a portion of the alkalies are removed, with conversion of part of the earths and the iron into carbonates. The further oxidation of the ferrous carbonate is shown by the yellow and brown crust, so commonly to be seen on the surface, or penetrating cracks in the hornblende. The change proceeds until a mere internal kernel of unaltered mineral remains, or until the whole has been converted into a ferruginous clay.†

Under the microscope, hornblende is strongly dichroic, and this is its principal feature. It is often longitudinally striated, in addition to which the cleavage planes form a sort of lattice work. The mineral is so irregular in form that very little reliance can be placed in its determination from that point of view.

Its degree of hardness is between 5 and 6.

Calcite (or Calcspar).

This is an important mineral for us to consider, forming as it does the basis of the most prominent limestones used in building.

It presents a great diversity of crystalline forms, but crystallises in the hexagonal (rhombohedral) system, the cleavage being very perfect. Its chemical composition is carbonate of lime. We have previously described the principal cause of the decomposition of this carbonate on p. 459.

Under the microscope, sections of calcspar, if the analyser alone is used, exhibit strong double refraction. It is very faintly pleochroic, and

* Rutley's "Mineralogy" (1876), p. 121.
† See Geikie, "Text-book of Geology," p. 75.

the intersecting cleavage planes are often well marked. When the polariser is used, it is frequently found that the crystals are made up of separate granules, which have different tints, and their boundaries are well defined. Each granule has a characteristic series of parallel lines running across it,—called twin lamellæ,—and the direction of these lines is quite independent of those of the surrounding granules. Sections of statuary marble show this structure to perfection.

In oolitic freestones the carbonate of lime appears to have formed round grains of sand or other nuclei, in concentric layers like an onion, and sections often show radiating lines.

Calcite is the principal petrifying mineral. Shells, corals, and other organic remains found in rocks are commonly made of it. Take such a stone as Portland, for example. A microscopic section of this will show that the abundant shelly matter contained in it is almost exclusively made of calcite. The iridescent zig-zag appearance of the mineral forming the shells at once proclaims the fact.

Many very compact limestones used as marbles owe their dense structure to calcite, the mineral not only forming the whole of the organic remains contained in them, but also being the matrix or cementing material. The carbonate of lime forming the organic remains, is sometimes of a more durable character than the matrix, hence, on weathering, the fossils,—as they are termed,—stand out from the surface of the stone, but often the reverse is the case. To show the importance of correctly ascertaining the nature of the carbonate of lime composing the shells of a limestone, it is only necessary to point to the many buildings now standing, where the stone is completely riddled with cavities formed by the decay of the shells, causing not only a source of weakness in the walls of the buildings, but an unsightly appearance.

Both large and minute cracks in stones are often filled with calcite. The mineral is often mistaken for quartz, which, at first sight, it looks very much like. If the cracks are filled with quart and not calcite, there is a considerable difference in quality, and, when the limestone is being rubbed down and polished, the minute quartz veins are a nuisance, causing a great deal more work.

Calcite is very easily distinguished from quartz. The former, when treated with acid, effervesces, and, having only a hardness of 3, is easily scratched with a knife; whilst acids produce no effect on, and the knife cannot scratch, the latter.

Aragonite.

This mineral crystallises in the rhombic system. Its chemical composition is exactly the same as calcite, but it weathers very differently. The fact that it is harder and heavier than that mineral would lead one to suppose that it is of a more durable character, but such is not the case. The shells of many molluscs are made of aragonite. The action of water containing carbonic acid, in percolating the rocks, has removed to a great extent those aragonite shells which were imbedded in them, so that, fortunately, the mineral is not so common as it might otherwise be. The cavities left on the removal of the shells are often subsequently filled up by calcite. When this is the case the calcite is seen under the microscope to be more or less coarsely crystalline, and the original structures of the shells being obliterated, they present a different appearance from the original calcite shells which may surround them.

In microscopic sections, aragonite may be distinguished from calcite by its biaxial polarisation in convergent light. We may pause to explain this. When there is one direction within a crystal, along which a ray of light can proceed without bifurcation, that crystal has only one optic axis, and is called *uniaxial*. Iceland spar (calcite) is an example. When a crystal has two such axes, it is termed *biaxial*,—aragonite, for example. On reference to the laws of optics relating to uniaxial and biaxial crystals, it will be seen that they respectively polarise in a distinctive manner.*

Repousse Work.—An exhibition of amateur *repoussé* metal-work is proposed to be held at 16, Long Acre, in December next, under the direction of Mr. T. J. Gawthorp, to whom intending exhibitors can apply for particulars.

* See Ganot's "Physics" (1883), pp. 572-575 and 584-596, for further information on this subject.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

23, Opening and Holding Hinged Windows, Ventilators, &c. D. Aubert.

A worm, actuated by hand by means of a pair of bevel wheels, or in a similar manner, causes a worm-wheel to revolve. To this worm-wheel is fixed one arm of a jointed lever, which raises or lowers the window when the wheel is turned. The worm-wheel and bevel wheels retain the lever and the window in any position.

60, Roofing Tiles. H. W. Robinson.

The object is to produce a tile which may be effectively used on roofs too flat to allow the use of ordinary roofing tiles. The front of the tile is pointed, and its surface is grooved with a number of channels deepening towards the point, and serving to conduct the water away from the joints. On the back portion of the tile projecting ridges are formed, over which fit the points of the tiles in the course above, corresponding grooves being made on the under sides. Nibs are sometimes formed on the under sides of the tiles and cemented into recesses in the tiles below.

101, Hinge. T. Greenwood.

This is a hinge particularly adapted to screens, but which may be used for other purposes. Toothed sectors attached to the panels of the screen, are held together by a bar pivoted at the centre of each sector.

117, Chimney-tops. J. Bennison.

Above the lower part of the chimney-top is fixed a canopy, surmounted by a cap. The upper part of the outer surface of the lower part and the whole of the inner surface of the canopy are fluted or grooved, and the outlets of both are arranged so that a free current of air carries up the smoke without down-draught.

217, Wood Block Flooring. W. Court.

Round the lower edge of each block is a semi-dovetailed groove. The blocks are laid on a foundation of concrete, in a composition consisting preferably of Stockholm tar, pitch, and resin. Before being laid, the blocks are dipped into the melted composition.

230, Street Orderly Bin. W. K. Sidgwick.

A cast-iron shell has a sand-box formed on it. The dust-bin is braced diagonally at the bottom, and fitted at the top with angle iron and sliding handles.

331, Door-fastening. M. P. Ismay.

A box, fixed on the door-frame, contains a sliding block, which is formed with teeth on its upper surface, and the block is pressed upwards with springs. A pawl on the door engages one of the teeth when the door is shut, and prevents it opening until sufficient pressure is applied to compress the springs. Very little pressure is required to close the door.

NEW APPLICATIONS FOR PATENTS.

April 24.—5,638, J. Russell, Cooking Ranges.—5,661, W. Williams, Portable Scaffold.

April 27.—5,678, J. Mitchell, Water-regulating and Waste-preventing Apparatus.—5,680, J. Jackson, Flushing Cisterns for Water-closets.—5,689, N. Locke, Self-locking Bolts for Doors.—5,706, J. Macleish, Water Fittings for Baths.—5,710, G. Porter, Dust Bins, &c.

April 28.—5,748, W. Pilkington, Plate Glass.—5,749, J. Howorth, Ventilators.—5,752, J. Parsons, Sanitary Pipe.—5,795, C. Gannaway, Ventilator.—5,803, G. Hardy, Fire Grates.

April 29.—5,812, J. Hill, Securing Knobs to Spindles for Door Locks and Latches.—5,820, J. Warwick, Manufacture of White Lead.—5,843, C. Howe, Cement or Plaster.—5,844, C. Howe, Cement or Plaster.

PROVISIONAL SPECIFICATIONS ACCEPTED.

1,368, T. Payne, Mitre Frame Cramp.—4,065, S. Gerish, Spring Hinge.—4,160, J. Osmond, Holding Doors or Casement Windows Partly Open.—4,229, M. Ismay, Double Swing Doors.—4,245, J. Brierley, Wood and Earthenware Floors.—4,243, J. Brierley, Ornamenting Wooden Floors and Steps.—7,806, J. Fliegel and E. Puttmann, Enamelled Metal Roofing Sheets.—2,530, W. Welch, Cement and Paint Composition.—4,267, J. Lockhart, Heating Buildings, &c.—4,330, G. Couch, Brick, Stone, Terra-cotta, and Concrete Walls.—4,332, G. Couch, Ridge, Hip, and Wall Tiles.—4,496, T. and J. Holt, Flushing Cisterns for Water-closets, &c.—4,547, W. Johnson, Brickmaking Machinery.—4,580, J. Parker, Dry-earth and Ash Closets.—4,596, C. Abel, Preventing Fungus in Flooring.—4,671, D. Cowan, Cooking-ranges or Kitcheners.—4,798, R. Dick, jun., Kitchen-ranges.—4,803, C. Bellamy, Firegrates.—5,124, W. Allen, Ladders.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

233, T. Newman, Linings for Tunnels or Subways.—2,590, R. Roberts, Open Spring Door Holder.—12,223, R. Wyatt, Syphon Flushing Apparatus for Cisterns.—15,856, J. and W. Thompson, Slate or Glass Roofing.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

APRIL 22.

By NEWSON & HARDING.

Islington—48, 50, and 52, Liverpool-road, 46 years, ground-rent 9*l.*	£1,545
Holloway—15, Travers-road, 74 years, ground-rent rent 4*l.* 19s.	280
Kentish Town—107, Islip-street, 63 years, ground-rent 8*l.* 8s.	300

APRIL 28.

By J. BAKER & WILKINSON.

Paddington—24, Chippenham-mews, 76 years, ground-rent 5*l.*	280

APRIL 29.

By BROWN, ROBERTS, & Co.

Pentonville—11, 13, and 24, Percy-circus, 46 years, ground-rent 18*l.*	1,820
Wapping—25 and 26, Wapping Wall, freehold	360

By INMAN, SHARP, & HARRINGTON.

Islington—Ground-rents of 26*l.* 5s. a year, term 56 years	460
Chelsea—Ground-rents of 24*l.* a year, term 43 years	390

By E. STIMSON.

East Sheen—1 to 12, Eleanor Cottages, 82 years, ground-rent 28*l.*	985
Deptford—1, Prince-street, 76 years, ground-rent 6*l.*	340
201 and 202, Evelyn-street, 40 years, ground-rent 4*l.* 10s.	290
39 to 51 odd, Hale-street, 34 years, ground-rent 9*l.* 19s. 6d.	335
Greenwich—10 and 11, Wellington-grove, freehold	390
Clapham—14 and 16, Meyrick-road, freehold	770
Walworth—115 to 121 odd, Westmorland-road, 66 years, ground-rent 12*l.*	1,215
Bermondsey—319 and 321, Weston-street, and 1 to 7, Little Hunter-street, 7 years, ground-rent 60*l.*	90
Walthamstow—Sharne Hall-street, two freehold cottages	200

APRIL 30.

By WAGSTAFF & WARMAN.

Hornsey—9, Hornsey Park-road, freehold	260

By R. REID.

Tottenham Court-road—6, 8, and 30, Windmill-street, freehold	3,540
Marylebone, Horace-street—Perpetual rent-charge of 5*l.* 5s. a year	105
Nos. 25, 26, 27, 38, 39, and 40, Horace-street, freehold	805

By H. P. CARTER.

Bayswater—16, Lonsdale-road, 56 years, ground-rent 7*l.* 4s.	340

MEETINGS.

SATURDAY, MAY 8.

Architectural Association.—Visit to the National Liberal Club, Victoria Embankment. 3 p.m.

Edinburgh Architectural Association.—Visit to Kirkton and Burntisland Parish Churches, and Rossend Castle.

MONDAY, MAY 10.

Society of Antiquaries of Scotland (Edinburgh).—Dr. Daniel Wilson, LL.D., on "Illustrations of Early Celtic Christian Art." Three other papers. 3 p.m.

TUESDAY, MAY 11.

Institution of Civil Engineers.—(1) Further discussion on Mr. Francis Fox's paper on "The Mersey Railway," and of Mr. W. E. Rich's paper on "The Hydraulic Passenger-Lifts at the Underground Stations of the Mersey Railway." (2, time permitting) Mr. W. H. Hulse on "Modern Machine-Tools and Workshop Appliances for the Treatment of Heavy Forgings and Castings." 8 p.m.

Society of Arts (Special Lectures).—Mr. Ernest Hart on "Japanese Art Work."—II. 8 p.m.

WEDNESDAY, MAY 12.

British Museum (Archaic Room).—Miss J. E. Harrison on "The Topography and Monuments of Modern Athens."—I. 11·45 a.m.

THURSDAY, MAY 13.

Parkes Museum of Hygiene.—Mr. R. Warrington, F.C.S., on "Recent Investigations on Well-waters." 8 p.m.

Society of Antiquaries.—8·30 p.m.

Society of Telegraph-Engineers and Electricians.—Mr W. H. Preece, F.R.S., on "Long-distance Telephony." 8 p.m.

Employers' Liability Assurance Corporation (Limited).—Annual Meeting. 2 p.m.

Edinburgh Architectural Association.—Annual Meeting. President's Valedictory Address. 8·30 p.m.

FRIDAY, MAY 14.

University College.—Professor C. T. Newton, C.B., on "Greek Inscriptions."—II. 4 p.m.

British Museum (Archaic Room).—Miss J. E. Harrison on "The Technique of Greek Vases."—I. 11·45 a.m.

SATURDAY, MAY 15.

Artists' General Benevolent Institution.—Anniversary Dinner, Freemasons' Tavern. 6 p.m.

Society of Arts (Special Lecture).—Professor George Forbes, M.A., on "Electricity,"—V. 3 p.m.

Society of Arts.—The papers to be read at the ordinary meetings of the Society of Arts, after the Easter recess, will include the following:—May 26th, "The Purification of Water by Agitation with Iron, and Sand Filtration," by Mr. William Anderson, M. Inst. C.E. In the Indian Section, Mr. B. H. Baden Powell's paper on "Indian Manufactures from a Practical Point of View," will be read on May 7th. The fourth, fifth, and sixth lectures of Professor George Forbes's course of Elementary Lectures on "Electricity" will be given on Saturday afternoons, May 8, 15, and 22; and Mr. Ernest Hart's second and third lecture on "Japanese Art Work" will be given on May 11th and 18th.

Miscellanea.

The Institution of Civil Engineers.—At the ordinary meeting on Tuesday, the 4th of May, Sir Frederick J. Bramwell, F.R.S. (President), in the chair, it was announced that Mr. George Hodson had been transferred from the class of Associate Members to that of members, and that the following candidates had been admitted as Students:—Messrs. Joseph Edward Davies, David Morgan Jenkins, James Newsome Matthews, Walter Bishop Purser, and Arthur Henry Wakeford. The monthly ballot resulted in the election of two Members, viz.:—Messrs. Joseph Hobson, Grand Trunk Railway, and James Young, P.W.D., Bombay; of fifteen Associate Members, viz.:—Messrs. Arthur Beckwith, Stud.Inst.C.E., Chislehurst; Philip George Brunton, D.P.W., Sydney; George Murray Campbell, Westminster; Charles Dick, London and North-Western Railway, Crewe; John Gill, Bangor; Edward Rainford Jackson, Stud. Inst. C.E., Jamaica; John Arthur Dayrell Lloyd, South Indian Railway; Richard Loch, Hereford; James Meldrum, Kensington; Karl Emil Nabholz, Dublin; Robert Robertson, B.Sc., Stud. Inst. C.E., Glasgow; Alexander Charles Schönberg, Westminster; William Charles Ernest Smith, Stud. Inst. C.E., Lodi, Italy; James Thropp, Lincoln; and John Alexander Warren, Stud. Inst. C.E., Glasgow; and of Mr. George John Armytage, Brighouse, as an Associate.

The Proposed Mining Exhibition at Newcastle-on-Tyne in 1887.—It is stated that the Newcastle Corporation will grant the Bull Park as the site for this Exhibition, to which reference was made in our last. At a meeting of the Building Committee last week, Mr. William Glover, Vice-president of the Northern Architectural Association, attended, and showed a sketch-plan of the mode in which he proposed to utilise the seven acres and a half of the Bull Park site. The committee carefully considered the plan, and some alterations were proposed, after which Mr. Glover was formally appointed architect for the Exhibition, and instructed to prepare a detailed plan to lay before a future meeting. The plan prepared by Mr. Glover shows about six-acres of covered-in space in the Bull Park, all arranged so that there will be no need for any visitor to go out into the uncovered ground at all to get from one department to another. It is proposed to reserve the reservoir in the ground for use in counexion with marine working models, diving-bells, and hydraulic appliances. It being thought that the Bull Park area will not be large enough to allow mining operations to be illustrated there, it is very probable that that department of the Exhibition will be accommodated on a portion of the recreation-ground to the north of the Bull Park. This would leave about five to five and a half acres to be covered in, and the remaining portion of the Bull Park will be laid out as an ornamental garden, in which will be erected band-stands, refreshment-rooms, &c.

Walthamstow.—From the Surveyor's annual report to the Walthamstow Local Board we learn that important works have been executed for the completion of the drainage of the district, and for the better disposal of the sewage. These works comprise the underdraining of about thirty-five acres of land on the Low Hall Farm; the construction of 1 mile 180 yards of concrete and earth carriers for the distribution of the effluent water over the south-westerly portion of the sewage farm; so that now over 100 acres of land of good and suitable soil are available for the purpose of deodorising the sewage in addition to the oxidising influences which are exercised in the effluent water over two miles of open carriers, before it is discharged into the Dagenham Brook. The works for the sewerage disposal also comprise the erection of brick mixing-shed, offices, boiler, and engine houses, with machinery for grinding the chemicals, and automatic arrangements whereby the varied flow of the sewage regulates the inflow of the proper amount of chemicals by night, as well as by day, thereby securing a regular and even pureness of effluent sewage; another important feature has been the construction of machinery whereby a more convenient disposal of the sludge is accomplished, which is now pumped into troughs and thereby passed on to the virgin soil at the rate of one acre a month, and there dug or ploughed into the land at the south-easterly portion of the farm.

Royal Institution of Great Britain.—The annual meeting was held on Saturday last, Sir Frederick Bramwell, F.R.S., Honorary Secretary and Vice-President, in the chair. The annual report of the Committee of Visitors for the year 1885, testifying to the continued prosperity and efficient management of the Institution, was read and adopted. The real and funded property now amounts to above 85,000*l.*, entirely derived from the contributions and donations of the members. Twenty-six new members paid their admission fees in 1885. Sixty-three lectures and nineteen evening discourses were delivered in 1885. The books and pamphlets presented in 1885 amounted to about 354 volumes, making, with 464 volumes (including periodicals bound) purchased by the managers, a total of 818 volumes added to the library in the year. Thanks were voted to the President, Treasurer, and the Honorary Secretary, to the Committees of Managers and Visitors, and to the Professors, for their valuable services to the Institution during the past year. The following gentlemen were unanimously elected as officers for the ensuing year:—President, the Duke of Northumberland, K.G., D.C.L., LL.D.; Treasurer, Henry Pollock, Esq.; Secretary, Sir Frederick Bramwell, F.R.S.

Risks of Intermittent Water-Supply. The dangers of the intermittent system of water-supply to houses is well illustrated by an event which recently happened in Marylebone, and of which Mr. Wynter Blyth gives account in his last report. When the water was turned off by the water company's officer, a vacuum was created in the water-main, and a quantity of coal-gas which had escaped from a leak in the gas-pipe in the ground was sucked in; when the water was again turned on, coal gas was delivered into the house with the water. In houses where the ground becomes saturated with filth by defective drainage, it is probably of no uncommon occurrence for the water to be polluted in the mains by filth of this nature. Coal-gas is easily detected, but it would be quite possible for more dangerous gases to enter the main without recognition. The risk is most easily avoided by the adoption of the constant system of supply, but even constant service must be occasionally interrupted when necessity arises for the repair of water-mains. The provision of a stop-cock to every house would go far to obviate this danger.—*Lancet.*

Railway Enterprise in India.—A section of the Indian Midland Railway from Cawnpore to Kalpi was recently inaugurated by the Hon. T. C. Hope. Starting from Cawnpore, the main line of the railway runs *vid* Kalpi, Jhansi, and Etawah, to Bhopal, a distance of about 320 miles, joining the Grand Indian Peninsular main line about midway between Khundwa and Jubbulpore. A distance of fully 120 miles is thus saved for traffic proceeding from Cawnpore to the port of Bombay for exportation. In addition to the main line direct, however, from Cawnpore to Bhopal, there are several other connected lines, namely, Jhansi-Gwalior, Jhansi-Manickpur, and Etawah-Saugor, which, when completed, will raise the mileage of the system to some 700 miles. The survey of the line from Cawnpore to Kalpi was commenced early in the year of 1884, so that the whole of the operations involved in the construction of the forty-two miles of railway have been accomplished in the comparatively short time of two years. The total expenditure is estimated at about thirty lakhs of rupees, which is on the average 70,000 rupees per mile.

Birmingham.—An interesting exhibition is being organised to be held at Bingley Hall during the month of September next, in connexion with the visit of the British Association to Birmingham. The Midland Manufacturers' Exhibition is to be confined strictly to articles manufactured in Birmingham and in the district embraced by a radius of fifteen miles, while it is further intended to limit the exhibits to the productions of leading manufacturers and to the makers of specialities, in order to be able to illustrate the great variety of manufactures carried on in the Midland district. Among the twelve classes into which the manufacturing section is divided, one will, as a matter of course, be devoted to hardware of every description. A second class will be devoted to heating and lighting, and will include stoves, fenders, and fire-irons, gas and electric light fittings, and oil lamps and candle fittings.—*Martineau and Smith's Hardware Trade Journal.*

A Warehouse Roof in Fore-street.—We have had an opportunity of seeing a glazed roof which has been erected on MacKenzie's patent system (the British Patent Glazing Company's) over the new premises at present being erected by Messrs. W. Brass & Son, contractors, of 47, Old-street, for the Fore-street Warehouse Company in Fore-street, from the plans of Messrs. Ford & Hesketh, architects, Aldermanbury. The roof consists of five spans of ironwork, 26 ft. long each, and these are covered with polished plate-glass in sheets, 10 ft. long each, which are placed in Mackenzie's patent bars, fitted up at centres of about 20 in. We are informed that sheets of polished plate-glass of such a size have never before been fitted up on a roof, and from the small size of the bars the shadows are reduced to the minimum. The roof has a very good appearance. One point worth mentioning is the admirable way in which the architects have arranged the plan of the warehouse so that the top-light from the skylight will be effectively available on all floors of the building.

Automatic Control of Temperature of Rooms.—A novel device for controlling the temperature of rooms heated by natural gas has lately been made by Mr. Westinghouse, and has been patented in the United States. It consists of a brass tube filled with alcohol, fastened to the wall of the room. This tube connects with the gas-pipe leading to the grate, where it is attached to an automatic valve. Attached to a tube of alcohol is a check-cock arrangement which can be set at any desired temperature. If the temperature rises above this, the alcohol thermometer records the fact and communicates it by an electric wire to the valve, which is closed. As soon as the temperature commences to fall below the desired degree, the valve is opened by the same method. Should the weather grow warmer, the instrument gradually shuts off the gas sufficiently to maintain the proper temperature.—*Invention.*

Torch for Paint-Burning, &c.—Messrs. G. Farmiloe & Sons draw our attention to the Wellington Automatic Torch, invented by them for burning off paint, soldering joints, brazing, tempering tools, &c., and for any purpose where a powerful flame is required. It consists of a strong brass reservoir, to which is attached a burner and needle-valve; a small air-pipe is also provided. The reservoir is charged, not filled, with two pints of benzoline. A small quantity of air is forced in by a few strokes of the air-pump, which forces the spirit forward to the burner. On opening the valve, a small quantity of spirit is allowed to run into a cup under the burner. This is lighted to warm the burner. The valve is again opened, and the spirit, on reaching the hot burner, is formed into a powerful gas, which is consumed as fast as made by unscrewing the valve; the size and intensity of flame can be regulated as desired.

Enlargement of the Prudential Insurance Company's Buildings.—The extensive buildings in Holborn and Brooke-street, which were erected a few years since for the Prudential Insurance Company, from designs by Mr. Alfred Waterhouse, R.A., are at present undergoing still further additions by an extension at the north end in Brooke-street, carried as far as Greville-street. The extension is 140 ft. in length, and when the enlargement now in progress is completed the company's buildings will have a frontage of 340 ft. to Brooke-street, occupying nearly the whole of the east side of that thoroughfare. The new buildings contain five floors, and are architecturally uniform with the original structure, faced with Edwards's Ruabon red bricks and terra-cotta, Mr. Waterhouse being the architect of the extension, and Messrs. Holland & Hannen the contractors.

Stoke Newington.—The fourth of the series of stained glass windows in the Sanctuary of all Saints' Church (Mr. F. T. Dollman, architect), has just been added. The subjects are illustrative of the passages from the "Te Deum,"—"The Goodly Fellowship of the Prophets," and "The Noble Army of Martyrs, Praise Thee," being a part of the general scheme of adoration of "All Saints." This window as well as the three eastern lights are from designs by Mr. Daniel Bell, and executed by Mr. R. Davison.

The Atmospheric Cowl Company.—In our notice last week of the exhaust cowl made by this company, it should have been stated that Mr. Wery is the patentee, and the cowl is known as "Wery's Patent."

Colonial and Indian Exhibition: Reception Committee.—After consultation with the Agents-General of the Colonies, the Reception Committee have adopted a classification of the visitors who may be expected to come within the range of their operations, and for whose benefit accordingly special excursions are being arranged. Besides a limited number of representatives of the different Executive Commissions, the classification includes:—Colonial governors, ministers and ex-ministers, members of the legislatures, mayors of cities, heads of Government departments, secretaries to the high commissioner and agents-general, judges of the higher courts of justice, officers in the colonial forces, who have held command down to and including the rank of lieutenant-colonel; presidents of railway companies, principals of railway companies, principals of universities, prelates and heads of religious denominations, widows of ex-governors and administrators of governments. The wives and daughters of those visitors who are comprised in the above list will be considered as being included in the classification. The names of distinguished visitors from the colonies not included in any of the above classes will be added to the committee's list on the recommendation of the agents-general, and as the arrangements of the committee permit.

Beech Wood as a Paving Material.—The above subject has recently been treated in detail by the *Deutsche Bauzeitung*, and the special interest manifested by Prince Bismarck in the adoption of this system has gained for it a relative amount of notoriety. During last summer trials were simultaneously at Berlin and Hamburg, a superficial area of nearly 11,000 square feet having been in each instance laid with beech-paving. The height was partly 4½ in. and partly 3¼ in. The forests of Friedrichsrich, near Hamburg, and Prince Bismarck's own estates furnished the wood, which was treated according to Roeper's patent process. This method comprises impregnation under high pressure with chloride of zinc, and subsequent immersion of each single block in a heated solution of pitch. Various other trials have been arranged for both in and out of Germany.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	5	0	7	0	0
Teak, E.I. ....load	12	10	0	15	0	0
Sequoia, U.S. ....foot cube	0	2	4	0	2	8
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...load	3	0	0	4	10	0
Elm ,, ...load	3	10	0	4	15	0
Fir, Dantsic, &c. ....load	1	10	0	4	0	0
Oak ,, ...load	3	0	0	5	0	0
Canada ....load	5	10	0	6	10	0
Pine, Canada red ....load	3	0	0	4	0	0
,, yellow ....load	3	0	0	5	0	0
Lath, Dantsic ....fathom	3	10	0	5	0	0
St. Petersburg ....load	4	0	0	6	0	0
Wainscot, Riga....log	2	15	0	4	10	0
,, Odessa, crown ....load	3	12	6	3	15	0

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Deals, Finland, 2nd and 1st...std. 100	7	10	0	8	10	0
,, 4th and 3rd ....load	6	0	0	7	10	0
Riga ....load	6	0	0	8	0	0
St. Petersburg, 1st yellow ....load	9	0	0	14	0	0
,, 2nd ,, ...load	7	0	0	8	15	0
,, white ....load	7	0	0	10	0	0
Swedish....load	6	0	0	15	0	0
White Sea ....load	7	0	0	17	10	0
Canada, Pine 1st ....load	17	0	0	30	0	0
,, 2nd ....load	12	0	0	17	0	0
,, 3rd, &c. ....load	8	0	0	10	0	0
,, Spruce 1st ....load	8	0	0	11	0	0
,, 3rd and 2nd ....load	5	0	0	7	10	0
New Brunswick, &c....load	5	0	0	7	0	0
Battens, all kinds ....load	4	0	0	12	0	0
Flooring Boards, sq. 1 in.—Prepared, first ....load	0	9	0	0	13	0
Second ....load	0	7	6	0	8	6
Other qualities ....load	0	5	0	0	7	0
Cedar, Cuba....foot	0	0	3½	0	0	4
Honduras, &c. ....foot	0	0	3	0	0	4
Australian ....foot	0	0	2½	0	0	3
Mahogany, Cuba ....foot	0	0	5	0	0	7½
St. Domingo, cargo average ....foot	0	0	5	0	0	7½
Mexican ,, ...foot	0	0	3½	0	0	4½
Tobasco ,, ...foot	0	0	4	0	0	6½
Honduras ,, ...foot	0	0	4½	0	0	6½
Maple, Bird's-eye....foot	0	0	6	0	0	8
Rose, Rio ....ton	7	0	0	10	0	0
Bahia....ton	6	0	0	10	0	0
Box, Turkey ....ton	5	0	0	18	0	0
Satin, St. Domingo ....foot	0	0	7	0	0	11
Porto Rico ....foot	0	0	8	0	1	3
Walnut, Italian ....foot	0	0	4	0	0	5

METALS.						
IRON—Pig in Scotland ....ton	0	0	0	0	0	0
Bar, Welsh, in London....ton	4	10	0	4	17	6
,, ,, in Wales ....ton	4	5	0	4	10	0
,, Staffordshire, London ....ton	5	5	0	6	10	0
Sheets, single, in London....ton	6	15	0	8	10	0
Hoops ,, ...ton	6	0	0	7	0	0
Nail-rods ,, ...ton	5	10	0	6	10	0
COPPER—						
British, cake and ingot ....ton	44	0	0	45	10	0
Best selected ....ton	46	0	0	46	10	0
Sheets, strong....ton	51	0	0	53	0	0
,, India ....ton	48	0	0	50	0	0
Australian ....ton	47	0	0	47	10	0
Chili, bars ....ton	40	5	0	40	12	6
YELLOW METAL....lb.	0	0	4½	0	0	4½
LEAD—Pig, Spanish ....ton	13	2	6	0	0	0
English, common brands....ton	13	12	6	0	0	0
Sheet, English ....ton	14	5	0	14	10	0
SPELTER—						
Silesian, special ....ton	14	7	6	0	0	0
Ordinary brands ....ton	14	0	0	14	5	0
TIN—						
Banca ....ton	94	10	0	0	0	0
Billiton ....ton	93	10	0	0	0	0
Straits ....ton	94	10	0	0	0	0
Australian ....ton	94	15	0	0	0	0
English ingots....ton	98	0	0	0	0	0
ZINC—						
English sheet ....ton	18	0	0	18	5	0

OILS.						
Linseed ....ton	19	12	6	19	17	6
Cocoanut, Cochin ....ton	28	10	0	29	0	0
Ceylon ....ton	24	15	0	0	0	0
Copra....ton	0	0	0	0	0	0
Palm, Lagos ....ton	23	0	0	0	0	0
Palm-nut Kernel ....ton	0	0	0	0	0	0
Rapeseed, English pale....ton	21	5	0	21	10	0
,, brown ....ton	19	17	6	20	0	0
Cottonseed, refined ....ton	16	10	0	17	10	0
Tallow and Oleine ....ton	25	0	0	45	0	0
Lubricating, U.S. ....gal.	6	0	0	10	0	0
,, Refined ....gal.	8	0	0	13	0	0
TURPENTINE—						
American, in casks....cwt.	1	9	6	1	10	3
TAR—Stockholm ....barrel	0	18	0	0	18	6
Archangel....barrel	0	10	6	0	11	0

CONTRACTS AND PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Painting, Tarring, &c.	War Department	*Official*	May 11th	ii.
Memorial Hall, Hampstead		W. J. Hardcastle	do.	ii.
Asphalte Carriageway Pavements	Com. of Sewers	*Official*	May 14th	ii.
New Station at Stratford	Great Eastern Ry. Co.	do.	do.	ii.
Paving Improvements	Chepping Wycombe U.S.A.	J. Bowen	do.	ii.
Construction of Branch Railway, &c.	Oxford Gas Light and Coke Co.	T. & C. Hawksley	May 15th	ii.
Supply of Creosote	Ryl. Portuguese Rail. C.	*Official*	do.	ii.
Enlargement of Chapel	Okehamptn Char. Trus.	— Ashworth	do.	ii.
Painting Lamp Columns and Brackets	Liverpool Corporation	*Official*	May 17th	ii.
Works, Repairs, and Building Materials	War Department	do.	do.	ii.
Painting, Colouring, &c.	Parish of St. Marylebne	do.	do.	xiv.
Iron Building	Com. of H.M. Works	do.	do.	ii.
Enlargement, &c., of Schools	School Brd for London	do.	May 18th	xiv.
Painting Works	War Department	do.	do.	ii.
Painting Works	do.	do.	May 19th	ii.
New Gas Works, New Romney	The Company	do.	May 22nd	ii.
Erection of Hospital, Douglas (I.O.M.)	The Committee	Bleakley & Cubbon	do.	ii.
Repairs and Painting	Hartley Winkney Un.	— Turner	May 26th	ii
Sewage Extension Works	Tottenham Local Board	— De Pape	May 31st	xiv.
Re-shingling Spire of Church	Parish of Oving, Sussex		Not stated	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Outdoor Assistant	Vestry of St. Mary Abbott's, Kensington	150*l.*	May 11th	xviii.
Foreman or Clerk of Works	Moulsford Lun. Asylum	104*l.*	May 16th	xviii.
Road Surveyor	Tottenham Local Board	200*l.*	May 18th	xviii.

TENDERS.

BROMLEY (Kent).—For alterations at Elmfield, Bromley Common, for Mr. Edward Norman. Mr. Ralph Nicholson, architect:—

Crossley	£870 0 0
Arnaud & Son	863 0 0
Wm. Smith	830 0 0

COLCHESTER.—For the erection of four cottages on the West Bergholt-road, Colchester, for Mr. Geo. Joslyn, Maldon-road, Colchester. Mr. J. W. Start, architect, Colchester:—

Beard	£687 15 0
Chambers	579 0 0
Smith	575 0 0
Shepherd	540 0 0
Ambrose	517 0 0

DAGENHAM (Essex).—For the erection of a public-house, with stabling and offices, adjoining the Railway Station, at Dagenham, Essex, for Messrs. Ind, Coope, & Co., Romford. Mr. John Hudson, architect, Leman-street, E.:—

T. Little, Whitechapel	£2,711 0 0
J. Hearle & Son, St. George's	2,702 0 0
J. Outhwaite & Son, Upper East Smithfield	2,500 0 0
J. Hammond & Son, Romford	2,406 0 0
J. Bentley, Waltham Abbey*	2,360 0 0

* Accepted.

DERBY.—For the erection of an inn at Shipley Gate, for Mr. E. M. Munday. Messrs. Pettifor & Simpson, architects, Leicester. Quantities supplied:—

G. Hewitt, Leicester	£1,500 0 0
A. Plant, Leicester	1,487 0 0
T. & H. Herbert	1,474 0 0
G. Oldershaw, Marlpool (accepted)	1,385 0 0
T. Shaw, Ilkeston	1,265 0 0
J. Manners, Ilkeston	1,185 0 0

[Architect's estimate, £1,446.]

FOLKESTONE.—For new schools to be erected in the Dover-road, Folkestone, for the Folkestone Borough School Board. Mr. Andrew Bromley, architect, Folkestone. Quantities by the architect:—

Tunbridge	£5,410 0 0
Brooks	5,350 0 0
Reason	5,338 0 0
Clemmans & Son	5,290 0 0
Webster	5,250 0 0
Baker	5,235 0 0
Petts & Son	5,079 0 0
Prebble	5,035 0 0
Hayward & Paramor	4,973 0 0
Mercer (accepted)	4,607 0 0

[All of Folkestone.]

HOLBORN.—For workshops at Eagle-street, Holborn, for Mr. W. T. Purkiss. Mr. Edward Clark, architect, Strand. Quantities by the architect:—

C. Wall	£2,634 10 0
Wilkinson Bros.	2,443 0 0
Kirk & Randall	2,426 0 0
J. Anley	2,362 0 0
Jackson & Todd	2,327 0 0
Perry & Co.	2,195 0 0
Steed Bros.	2,190 0 0
T. L. Green	2,189 0 0
Mattock Bros.	2,162 0 0
J. O. Richardson (accepted)	2,039 0 0

HULL.—For the erection of new dispensary and surgeon's residence, Baker-street, Hull, for the Hull and Sculcoates Dispensary. Messrs. Botterill, Son, & Bilson, architects, Parliament-street, Hull. Quantities by the architect:—

Simpson & Malone	£2,130 1 6
B. Musgrave	2,096 0 0
J. W. Garbutt	1,979 6 6
R. Sergeant	1,977 0 0
Hockney & Liggins	1,960 0 0
Mark Harper	1,924 0 0
Thos. Goates	1,921 0 0
Thos. Kendall	1,916 9 4
J. T. Skinner	1,900 0 0
J. Drury	1,900 0 0
Exors. of T. Southern	1,891 0 0
J. F. Freeman	1,872 10 0
Geo. Ling	1,866 15 0
F. Blackburn (accepted)	1,866 0 0

LAMBETH.—For rebuilding wall, and drainage work, at Lambeth Workhouse Schools, Linton-grove, Lower Norwood. Messrs. Catt & Smith, architects, Furnival's Inn:—

	A.	B.
Bottoms	£390 0	£30
Martin	377 0	20
Smith	361 0	12
Leslie & Knight	312 0	10
J. Wood & Co.	296 0	25
Dean	290 0	20
Robson	286 0	20
Wallace	285 0	19
Flaxman	276 12	21
G. Jenvey	273 13	22
F. Higgs	263 0	20
Walker	250 0	25
Brightman	249 0	24
Turner	228 0	20
Hitchcock	225 0	8
Barton	212 0	24

A. Wall rebuilt, and present coping used.
B. Wall rebuilt, and terra-cotta coping used.

LONDON.—For exterior painting and interior works at York House, Regent-street, for the Junior Army and Navy Stores (Limited). Mr. F. Dudley, architect, Queen Anne's Gate, S.W.:—

Ansell	£487 0 0
Smith & Sons	358 0 0
Langdale & Son	329 0
Clarke & Mannooch (accepted)	296

LONDON.—For building two blocks of offices and chambers at No. 63, Lincoln's Inn-fields, for Mr. William Robinson. Mr. Wm. Simmons, architect, Long Acre:—

Mark Gentry, Wormwood-street, E.C. accepted.	Front block	£9,975 0 0
	Back block	6,340 0 0
	Concrete floors	1,700 0 0

[Quantities of the two blocks by Messrs. Nixon & Raven and the architect respectively.]

LONDON.—For the erection of an infants' school, crèche, meeting-hall, &c., in Angel-alley, Whitechapel, for the Trustees of the George-yard Ragged Schools. Mr. John Hudson, architect, Leman-street, E.:—

J. Egan, Buckhurst-hill, Essex	£3,324	6	0
Horey, Whitechapel	2,695	0	0
Little, Whitechapel	2,565	0	0
Gladding, Whitechapel	2,559	0	0
M. Gentry, City	2,440	0	0
Ashby & Horner, City	2,390	0	0
Coulsell Bros., Bethnal-green	2,245	0	0
Taylor, Haggerston	2,197	0	0
F. & F. J. Wood, Mile End*	2,132	0	0

* Accepted.

LONDON.—For the erection of library, office, kitchen, caretaker's rooms, &c., in Angel-alley, Whitechapel, for the Trustees of the George-yard Ragged Schools. Mr. John Hudson, architect, Leman-street, E.:—

J. Egan, Buckhurst-hill, Essex	£1,267	8	0
Horey, Whitechapel	1,050	0	0
Little, Whitechapel	987	0	0
Gladding, Whitechapel	968	0	0
M. Gentry, City	936	0	0
Ashby & Horner, City	929	0	0
Coulsell Bros., Bethnal-green	955	0	0
Taylor, Haggerston	879	0	0
F. & F. J. Wood, Mile End*	853	0	0

* Accepted.

LONDON.—For painting and general repairs to the Davenants Schools, Whitechapel-road, for the Trustees. Mr. John Hudson, architect, Leman-street, E.:—

Eaton & Co., Whitechapel	£267	0	0
Coulsell Bros., Bethnal-green	263	0	0
Johnson, Whitechapel	258	0	0
Gladding, Whitechapel	258	0	0
Horey, Whitechapel	248	0	0
Catmur, Mile End (accepted)	242	0	0

LONDON.—For general repairs to No. 12, Osborn-street, Whitechapel, for Messrs. W. T. Hore & Co. Mr. John Hudson, architect, Leman-street, E.:—

W. Gladding	£119	0	0
T. Little	93	0	0
A. Eaton	87	10	0
F. W. Horey	85	0	0
Coulsell Bros. (accepted)	79	0	0

NEWCASTLE-UNDER-LYME.—For new public buildings, Newcastle-under-Lyme. Messrs. W. Sugden & Son, Mr. W. H. Sugden, Mr. John Blood, and Messrs. Chapman & Snape, joint architects. Contract 1 (quantities by Messrs. Sugdens and Blood): Free library, school of art, assembly-room, and council-chamber, &c. Contract 2 (quantities by Messrs. Chapman & Snape): Public baths:—

	Contract 1.		Contract 2.		Total.	
	£.	s.d.	£.	s.d.	£.	s.d.
J. Shillitoe & Sons, Bury St. Edmunds	18,375	0 0	13,250	0 0	34,625	0 0
Lucas & Son, London	18,628	0 0	11,715	0 0	30,343	0 0
J. Webb, Silverdale	13,985	0 0	9,776	16 0	23,761	16 0
E. Gabbutt, Liverpool	13,222	0 0	10,200	0 0	23,422	0 0
R. Bradbury, Stoke-on-Trent	13,760	0 0	9,645	0 0	23,405	0 0
Rose Vale Brick and Tile Company	13,888	0 0	9,101	0 0	22,989	0 0
Yorke & Goodwin, Tunstall	13,757	17 5	8,986	9 8	22,744	7 1
Horsman & Co., Wolverhampton	13,286	0 0	9,365	14 7	22,651	14 7
H. & R. Inskip, Longton	13,992	0 0	9,108	0 0	23,100	0 0
T. S. Bromage, Longton	13,232	0 0	8,831	0 0	22,063	0 0
S. Warburton, Manchester	13,000	0 0	9,000	0 0	22,000	0 0
N. Barlow, Stoke-on-Trent	12,626	0 0	8,872	0 0	21,498	0 0
J. Grosvenor, Tunstall	12,332	0 0	8,441	0 0	20,773	0 0
J. Gallimore, Newcastle	12,000	0 0	8,500	0 0	20,500	0 0
Concrete and Iron only.						
Cordingley & Sons, Bradford	2,570	0 0	1,985	0 0	4,555	0 0
Homan & Rodgers, Manchester	1,416	0 0	1,770	1 6	3,186	1 6
France & Ormond, Manchester	1,251	19 6	1,641	19 0	2,893	18 6
Stewart & Co., Edinburgh	1,094	3 7	1,745	0 0	2,839	3 7
Lindsay & Co., Paddington	1,260	0 0	1,529	0 0	2,789	0 0
H. Lockwood, Manchester	965	11 9	1,254	0 0	2,219	11 9
Roger Lowe, Farnworth	998	0 0	1,109	7 0	2,107	7 0

NEWMARKET.—For swimming-baths and laundry, for the Newmarket Baths and Laundry Company (Limited). Mr. Thomas Wilkins, architect:—

H. J. Linzell, Newmarket	£2,400	0	0
W. & F. Croaker, Gt. Dover-street, London	2,285	0	0
Wm. Noble, Horse Shoe Wharf, Upper Thames-street, and Sutton, Surrey	2,250	0	0

NORWOOD.—For alterations at No. 1, The Pavement, South Norwood, for the London and South-Western Bank (Limited). Messrs. Tolley & Son, architects:—

J. W. Falkner	£1,718	0	0
J. & C. Bowyer	1,649	0	0
A. Steer	1,613	0	0
W. Marriage	1,608	0	0
J. P. Greenwood	1,592	0	0
C. Kynoch & Co.	1,580	0	0
J. Smith & Sons	1,560	0	0
F. Higgs	1,550	0	0
W. G. Wyatt & Co.	1,508	0	0
G. Bryan (accepted)	1,453	0	0

READING.—For alterations to three houses in the King's-road, Reading, for Capt. Frederick Stephens. Mr. G. W. Webb, architect, Friar-street, Reading:—

Bottrill, Reading	£425	0	0
Searle, Reading	390	0	0

SOUTHWARK.—For the erection of the first of three blocks of model dwellings, for the Trustees of the Hayle's Estate, Lambeth, in St. George's-road, Southwark, according to plans approved by the Charity Commissioners and the Public Loan Commissioners. Mr. Ralph Nicholson, architect. Quantities by Mr. Henry Smith:—

Hall, Beddall, & Co.	£13,777	0	0
J. & H. Mills	13,658	0	0
Thos. Rider & Son	13,218	0	0
Ford & Sons	12,784	0	0
Martin Wells & Co.	12,472	0	0
Higgs & Hill	12,460	0	0
Wm. Smith (accepted)	12,276	0	0

WRAYSBURY.—For new vicarage and stables at Wraysbury, near Staines. Mr. Ewan Christian, architect. Quantities supplied:—

P. F. Cooke, Kennington	£3,440	0	0
Aviss & Co., Putney	3,240	0	0
T. Norris, Sunningdale	3,100	0	0
L. H. & R. Roberts, Islington	2,886	0	0
S. Hunt, Chiswick	2,842	0	0
W. Watson, Ascot	2,495	0	0

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